

Exhibit B

**UNITED STATES DISTRICT COURT FOR
THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION**

OSCAR SANCHEZ, MARCUS WHITE,
TESMOND MCDONALD, MARCELO
PEREZ, ROGER MORRISON, KEITH
BAKER, PAUL WRIGHT, TERRY
MCNICKELS, JOSE MUNOZ, KIARA
YARBOROUGH, OLIVIA
WASHINGTON, AND IDEARE BAILEY;
*on their own and on behalf of a class of
similarly situated persons;*

Petitioners/Plaintiffs,

v.

DALLAS COUNTY SHERIFF MARIAN
BROWN, *in her official capacity*; DALLAS
COUNTY, TEXAS;

Respondents/Defendants

Civil Action No. 3:20-cv 00832-E-BH

DECLARATION OF SAGIV GALAI

I, SAGIV GALAI, DECLARE:

1. I am a paralegal employed by the Criminal Law Reform Project of the American Civil Liberties Union. I provide litigation support in this matter and work directly with counsel for the plaintiffs and the putative class herein.
2. I make this declaration of my personal knowledge.
3. On April 9, 2020, upon initiating this matter, plaintiffs submitted the expert declaration of Dr. Robert L. Cohen (Doc 3-2) as attachment to the Memorandum in Support of Motion for Temporary Restraining Order, Preliminary Injunction, and Writ of Habeas Corpus (Doc 3).
4. The Cohen Declaration provided expert insight with regard to the significant threat that COVID-19 poses in the Dallas County Jail. The Cohen Declaration referenced multiple reports and other documents in support of the claims

therein. Attached to this declaration are the items referenced by Dr. Cohen in his declaration, as exhibits.

5. On April 17, 2020, Dr. Cohen filed a Supplemental Declaration with this court. The Supplemental Declaration referenced multiple reports and other documents in support of the claims therein. Attached to this declaration are the items referenced by Dr. Cohen in the supplemental declaration, as exhibits. These begin with Exhibit S.

6. Certain sources referenced by Dr. Cohen in both his April 9 and April 17 declarations are “live” documents which cannot be adequately converted into an exhibit format because these items are updated regularly, and thus their content changes periodically. Such items were omitted from this compilation of materials because a true and correct representation of them was not possible. In particular, the Texas Department of State Health Services, “Texas Case Counts COVID-19,” which present data in the form of maps and graphs that change on a daily basis, was omitted. Similarly, a copy of the *COVID-19 Live Updates* webpage of the KERA News website was also omitted because information on this source changes on a regular basis.

7. Attached hereto as **Exhibit A** is a true and correct copy of “UpToDate” resource on “Coronavirus disease 2019 (COVID-19): Epidemiology, virology, clinical features, diagnosis, and prevention.”

8. Attached hereto as **Exhibit B** is a true and correct copy of the Dallas County Health and Human Services COVID-19 Summary for April 3, 2020.

9. Attached hereto as **Exhibit C** is a true and correct copy of the Recommendations by the Centers for Disease Control on “Prevention and Treatment of Tuberculosis in Correctional and Detention Facilities.”

10. Attached hereto as **Exhibit D** is a true and correct copy of Governor Abbott’s Executive Order: Implementing Essential Services and Activities Protocols, as issued on March 31, 2020.

11. Attached hereto as **Exhibit E** is a true and correct copy of County Judge

Clay Jenkin's *Safer At Home Order*, as amended on April 6, 2020.

12. Attached hereto as **Exhibit F** is a true and correct copy of the City of Dallas' Shelter in Place: Safer At Home Order, Frequently Asked Questions resource.

13. Attached hereto as **Exhibit G** is a true and correct copy of an editorial article published by the Dallas Morning News website for April 5, 2020. Entitled: "What should we do about the jail during pandemic?".

14. Attached hereto as **Exhibit H** is a true and correct copy of a webpage from the National Institutes of Health. Entitled: "New coronavirus stable for hours on surfaces," as published on March 17, 2020.

15. Attached hereto as **Exhibit I** is a true and correct copy of a CDC Morbidity and Mortality Weekly Report (early release), authored by Wycliffe et al., and published on April 1, 2020. Entitled: "Presymptomatic Transmission of SARS-CoV-2 Singapore, January 23-March 16, 2020."

16. Attached hereto as **Exhibit J** is a true and correct copy of the Dallas County Sheriff's Office COVID-19 Initiatives (Guideline), as released on March 27, 2020.

17. Attached hereto as **Exhibit K** is a true and correct copy of the CDC Interim Guidance on Management of Coronavirus Disease 2019 (COVID-19) in Correctional and Detention Facilities, as released on March 23, 2020 ("printer friendly version").

18. Attached hereto as **Exhibit L** is a true and correct copy of the Cook County, Illinois, Sheriff's Daily Report, as released on April 3, 2020.

19. Attached hereto as **Exhibit M** is a true and correct copy of a Fox 4 News article authored by Ashley Paredez on April 4, 2020. Entitled: "Confirmed COVID-19 cases at Dallas County Jail now up to 28."

20. Attached hereto as **Exhibit N** is a true and correct copy of a webpage from the Sheriff's website listing the detention centers under the care of the Dallas County Sheriff's Department.

21. Attached hereto as **Exhibit O** is a true and correct copy of an archived

KUOW.org webpage from April 3, 2020. Entitled: “Updates: COVID-19 in Washington State (March 30 – April 5).”

22. Attached hereto as **Exhibit P** is a true and correct copy of a World Health Organization webpage, entitled: “Coronavirus disease (COVID-19) advice for the public: Myth busters.”

23. Attached hereto as **Exhibit Q** is a true and correct copy of a CDC webpage entitled: “Information for People who are at Higher Risk for Severe Illness.”

24. Attached hereto as **Exhibit R** is a true and correct copy of a WHO report, entitled: “Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19).”

25. Attached hereto as **Exhibit S** is a true and correct copy of a MedPage Today article authored by Diana Swift on March 9, 2020. Entitled: “Study: COVID-19 Is Also Spread by Fecal-Oral Route.”

26. Attached hereto as **Exhibit T** is a true and correct copy of an article by Fei Zhou et al.. Entitled; “Clinical course and risk factors for morality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study.”

27. Attached hereto as **Exhibit U** is a true and correct copy of an NPR News article authored by Maria Godoy on March 22, 2020. Entitled: “Study Calculates Just How Much Age, Medical Conditions Raise Odds of Severe COVID-19.”

28. Attached hereto as **Exhibit V** is a true and correct copy of a CDC Morbidity and Mortality Weekly Report article by Shika Garg et al.. Entitled: “Hospitalization Rates and Characteristics of Patients Hospitalized with Laboratory-Confirmed Coronavirus Disease 2019 – COVID-NET, 14 States, March 1-30, 2020.”

29. Attached hereto as **Exhibit W** is a true and correct copy of the CDC COVID-NET Chart: A Weekly Summary of U.S. COVID-19 Hospitalization Data, *Laboratory-Confirmed COVID-19-Associated Hospitalizations*.

30. Attached hereto as **Exhibit X** is a true and correct copy of a Healthline

article authored by Shawn Radcliffe on March 19, 2020. Entitled: “Nearly 40% of Those Hospitalized for COVID-19 Are Under 55.”

31. Attached hereto as **Exhibit Y** is a true and correct copy of a Vox News article authored by Dylan Scott on March 23, 2020. Entitled: “The Covid-19 risks for different age groups, explained.”

32. Attached hereto as **Exhibit Z** is a true and correct copy of a Texas Department of State Health Services webpage entitled: “Coronavirus Disease 2019 (COVID-19).”

33. Attached hereto as **Exhibit AA** is a true and correct copy of a CDC webpage entitled: “Coronavirus Disease 2019: Older Adults.”

34. Attached hereto as **Exhibit BB** is a true and correct copy of National Institute of Corrections webpage entitled: “Aging in Prison.”

35. Attached hereto as **Exhibit CC** is a true and correct copy of an American Journal of Public Health article by Brie Williams et al.. Entitled: “Aging in Correctional Custody: Setting a Policy Agenda for Older Prisoner Health Care.”

36. Attached hereto as **Exhibit DD** is a true and correct copy of an AL.Com article authored by Connor Sheets on April 5, 2020 (updated April 7, 2020). Entitled: “Alabama prison system’s COVID-19 plan anticipates widespread infection, deaths, National Guard intervention.”

37. Attached hereto as **Exhibit EE** is a true and correct copy of a Chicago Sun-Times article authored by Tina Sfondeles and Carlos Ballesteros on April 1, 2020. Entitled: “Illinois National Guard medics headed to Stateville as inmate coronavirus cases rise.”

38. Attached hereto as **Exhibit FF** is a true and correct copy of a Fox 8 News article authored by Tina Naquin on April 14, 2020. Entitled: “Ohio National Guard members begin working at prison that reported inmate coronavirus death.”

39. Attached hereto as **Exhibit GG** is a true and correct copy of a Salem News

article authored by Tom Giambroni on April 15, 2020. Entitled: “Prison may seek extra week of Guard help.”

40. Attached hereto as **Exhibit HH** is a true and correct copy of an April 6, 2020 Press Release issued by the office of Ohio Governor DeWine. Entitled: “Sites Selected for Enhanced Hospital Capacity; Ohio National Guard to Assist Federal Prison; Dispute Resolution Commission Now Active.”

41. Attached hereto as **Exhibit II** is a true and correct copy of a New York City Department of Health webpage, entitled: “COVID-19: Symptoms, Chronic Health Risks.”

42. Attached hereto as **Exhibit JJ** is a true and correct copy of a New York City Board of Correction webpage, entitled: “NYC Board of Correction and COVID-19.”

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 17th day of April, 2020.

/S/ Sagiv Galai

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ATTORNEYS FOR PETITIONERS/PLAINTIFFS

**admitted pro hac vice*

***N.D. Texas admission application forthcoming*

**** pro hac vice application forthcoming*

Exhibit A



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Wolters Kluwer

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Coronavirus disease 2019 (COVID-19): Epidemiology, virology, clinical features, diagnosis, and prevention

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All topics are updated as new evidence becomes available and our [peer review process](#) is complete.

Literature review current through: Mar 2020. | **This topic last updated:** Apr 10, 2020.

INTRODUCTION

Coronaviruses are important human and animal pathogens. At the end of 2019, a novel coronavirus was identified as the cause of a cluster of pneumonia cases in Wuhan, a city in the Hubei Province of China. It rapidly spread, resulting in an epidemic throughout China, followed by an increasing number of cases in other countries throughout the world. In February 2020, the World Health Organization designated the disease COVID-19, which stands for coronavirus disease 2019 [1]. The virus that causes COVID-19 is designated severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); previously, it was referred to as 2019-nCoV.

Understanding of COVID-19 is evolving. Interim guidance has been issued by the [World Health Organization](#) and by the United States [Centers for Disease Control and Prevention](#) [2,3]. Links to these and other related society guidelines are found elsewhere. (See '[Society guideline links](#)' below.)

This topic will discuss the virology, epidemiology, clinical features, diagnosis, and prevention of COVID-19.

The management of COVID-19 is discussed in detail elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Management in adults](#)" and "[Coronavirus disease 2019 \(COVID-19\): Critical care issues](#)".)

Issues related to COVID-19 in specific populations are discussed elsewhere:

- (See "[Coronavirus disease 2019 \(COVID-19\): Pregnancy issues](#)".)

- (See ["Coronavirus disease 2019 \(COVID-19\): Considerations in children"](#).)

Community-acquired coronaviruses, severe acute respiratory syndrome (SARS) coronavirus, and Middle East respiratory syndrome (MERS) coronavirus are discussed separately. (See ["Coronaviruses"](#) and ["Severe acute respiratory syndrome \(SARS\)"](#) and ["Middle East respiratory syndrome coronavirus: Virology, pathogenesis, and epidemiology"](#).)

VIROLOGY

Full-genome sequencing and phylogenetic analysis indicated that the coronavirus that causes COVID-19 is a betacoronavirus in the same subgenus as the severe acute respiratory syndrome (SARS) virus (as well as several bat coronaviruses), but in a different clade. The structure of the receptor-binding gene region is very similar to that of the SARS coronavirus, and the virus has been shown to use the same receptor, the angiotensin-converting enzyme 2 (ACE2), for cell entry [4]. The Coronavirus Study Group of the International Committee on Taxonomy of Viruses has proposed that this virus be designated severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [5].

The Middle East respiratory syndrome (MERS) virus, another betacoronavirus, appears more distantly related [6,7]. The closest RNA sequence similarity is to two bat coronaviruses, and it appears likely that bats are the primary source; whether COVID-19 virus is transmitted directly from bats or through some other mechanism (eg, through an intermediate host) is unknown [8]. (See ["Coronaviruses", section on "Viral serotypes"](#).)

In a phylogenetic analysis of 103 strains of SARS-CoV-2 from China, two different types of SARS-CoV-2 were identified, designated type L (accounting for 70 percent of the strains) and type S (accounting for 30 percent) [9]. The L type predominated during the early days of the epidemic in China, but accounted for a lower proportion of strains outside of Wuhan than in Wuhan. The clinical implications of these findings are uncertain.

EPIDEMIOLOGY

Geographic distribution — Globally, more than a million confirmed cases of COVID-19 have been reported. Updated case counts in English can be found on the [World Health Organization](#) and [European Centre for Disease Prevention and Control](#) websites. An interactive map highlighting confirmed cases throughout the world can be found [here](#).

Since the first reports of cases from Wuhan, a city in the Hubei Province of China, at the end of 2019, more than 80,000 COVID-19 cases have been reported in China, with the majority of those from Hubei and surrounding provinces. A joint World Health Organization (WHO)-China fact-finding mission estimated that the epidemic in China peaked between late January and early February 2020 [10], and the rate of new cases decreased substantially by early March.

However, cases have been reported in all continents, except for Antarctica, and have been steadily rising around the world.

Route of transmission — Understanding of the transmission risk is incomplete. Epidemiologic investigation in Wuhan at the beginning of the outbreak identified an initial association with a seafood market that sold live animals, where most patients had worked or visited and which was subsequently closed for disinfection [11]. However, as the outbreak progressed, person-to-person spread became the main mode of transmission.

Person-to-person spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is thought to occur mainly via respiratory droplets, resembling the spread of influenza. With droplet transmission, virus released in the respiratory secretions when a person with infection coughs, sneezes, or talks can infect another person if it makes direct contact with the mucous membranes; infection can also occur if a person touches an infected surface and then touches his or her eyes, nose, or mouth. Droplets typically do not travel more than six feet (about two meters) and do not linger in the air. Although one letter to the editor described a study in which SARS-CoV-2 remained viable in experimentally generated aerosols for at least three hours, the relevance of this to the epidemiology of COVID-19 and its clinical implications are unclear [12]. Given the current uncertainty regarding transmission mechanisms, airborne precautions are recommended in certain situations. (See '[Infection control for suspected or confirmed cases](#)' below.)

SARS-CoV-2 RNA has also been detected in blood and stool specimens [13-15]. Live virus has been cultured from stool in some cases [16], but according to a joint WHO-China report, fecal-oral transmission did not appear to be a significant factor in the spread of infection [17].

Period of infectivity — The interval during which an individual with COVID-19 is infectious is uncertain. It appears that SARS-CoV-2 can be transmitted prior to the development of symptoms and throughout the course of illness. However, most data informing this issue are from studies evaluating viral RNA detection from respiratory and other specimens, and detection of viral RNA does not necessarily indicate the presence of infectious virus.

Viral RNA levels from upper respiratory specimens appear to be higher soon after symptom onset compared with later in the illness [18-20]. Additionally, in a study of nine patients with mild COVID-19, infectious virus was isolated from naso/oropharyngeal and sputum specimens during the first week of illness, but not after this interval, despite continued high viral RNA levels at these sites [20]. These findings raise the possibility that transmission might be more likely in the earlier stage of infection, but additional data are needed to confirm this hypothesis.

The duration of viral shedding is also variable; there appears to be a wide range, which may depend on severity of illness. In one study of 21 patients with mild illness (no hypoxia), 90 percent had repeated negative viral RNA tests on nasopharyngeal swabs by 10 days after the onset of symptoms; tests were positive for longer in patients with more severe illness [21]. In another study of 137 patients who survived COVID-19, the median duration of viral RNA shedding from oropharyngeal specimens was 20 days (range of 8 to 37 days) [22]. As mentioned above, detectable viral RNA does not always correlate with isolation of infectious virus, and there may be a threshold of viral RNA level below which infectivity is unlikely. In the

study of nine patients with mild COVID-19 described above, infectious virus was not detected from respiratory specimens when the viral RNA level was $<10^6$ copies/mL [20].

Transmission of SARS-CoV-2 from asymptomatic individuals (or individuals within the incubation period) has also been described [23-28]. However, the extent to which this occurs remains unknown. In an analysis of 157 locally acquired COVID-19 cases in Singapore, transmission during the incubation period was estimated to account for 6.4 percent; in such cases, the exposures occurred one to three days prior to symptom development [29]. Large-scale serologic screening may be able to provide a better sense of the scope of asymptomatic infections and inform epidemiologic analysis; several serologic tests for SARS-CoV-2 are under development, and one has been approved by the US Food and Drug Administration (FDA) [30,31].

Risk of transmission — The risk of transmission from an individual with SARS-CoV-2 infection varies by the type and duration of exposure, use of preventive measures, and likely individual factors (eg, the amount of virus in respiratory secretions). Most secondary infections have been described among household contacts, in health care settings when personal protective equipment was not used (including hospitals [32] and long-term care facilities [33]), and in closed settings (eg, cruise ships [34]). However, reported clusters of cases after social or work gatherings also highlight the risk of transmission through close, non-household contact.

Contact tracing in the early stages of epidemics at various locations suggested that most secondary infections were among household contacts, with a secondary attack rate of up to 10 percent [17,35,36]. According to a joint WHO-China report, the rate of secondary COVID-19 in various locations ranged from 1 to 5 percent among tens of thousands of close contacts of confirmed patients in China; most of these occurred within households, with an in-household secondary attack rate of 3 to 10 percent [17]. In the United States, the symptomatic secondary attack rate was 0.45 percent among 445 close contacts of 10 confirmed patients; among household members, the rate was 10.5 percent [35]. In a similar study in Korea, the rates were comparable, with secondary infections in 0.55 percent of all contacts and 7.6 percent of family members [36].

Clusters of cases have also been reported following family, work, or social gatherings where close, personal contact can occur [37,38]. As an example, epidemiologic analysis of a cluster of cases in the state of Illinois showed probable transmission through two family gatherings at which communal food was consumed, embraces were shared, and extended face-to-face conversations were exchanged with symptomatic individuals who were later confirmed to have COVID-19 [37].

The risk of transmission with more indirect contact (eg, passing someone with infection on the street, handling items that were previously handled by someone with infection) is not well established and is likely low.

Immunity — Antibodies to the virus are induced in those who have become infected. Preliminary evidence suggests that some of these antibodies are protective, but this remains to be definitively established. Moreover, it is unknown whether all infected patients mount a protective immune response and how long any protective effect will last.

Data on protective immunity following COVID-19 are emerging [19,20,39]. A case series evaluating convalescent plasma for treatment of COVID-19 identified neutralizing activity in plasma of recovered patients that appeared to be transferred to recipients following plasma infusion [39]. Similarly, in another study of 23 patients who recovered from COVID-19, antibodies to the receptor-binding domain of the spike protein and the nucleocapsid protein were detected by enzyme-linked immunosorbent assay (ELISA) in most patients by 14 days following the onset of symptoms; ELISA antibody titers correlated with neutralizing activity [19]. One preliminary study reported that rhesus macaques infected with SARS-CoV-2 did not develop reinfection following recovery and rechallenge [40]; however, this study has not been published in a peer-reviewed journal, and further confirmation of these findings is needed.

As above, the FDA has approved a test that qualitatively identifies immunoglobulin (Ig)M and IgG antibodies against SARS-CoV-2 in serum or plasma [31]. Should evidence confirm that the presence of these antibodies reflects a protective immune response, serologic screening will be an important tool to understand population immunity and distinguish individuals who are at lower risk for reinfection.

CLINICAL FEATURES

Incubation period — The incubation period for COVID-19 is thought to be within 14 days following exposure, with most cases occurring approximately four to five days after exposure [41-43].

In a study of 1099 patients with confirmed symptomatic COVID-19, the median incubation period was four days (interquartile range two to seven days) [42].

Using data from 181 publicly reported, confirmed cases in China with identifiable exposure, one modeling study estimated that symptoms would develop in 2.5 percent of infected individuals within 2.2 days and in 97.5 percent of infected individuals within 11.5 days [44]. The median incubation period in this study was 5.1 days.

Spectrum of illness severity — The spectrum of symptomatic infection ranges from mild to critical; most infections are not severe [32,43,45-49]. Specifically, in a report from the Chinese Center for Disease Control and Prevention that included approximately 44,500 confirmed infections with an estimation of disease severity [50]:

- Mild (no or mild pneumonia) was reported in 81 percent.
- Severe disease (eg, with dyspnea, hypoxia, or >50 percent lung involvement on imaging within 24 to 48 hours) was reported in 14 percent.
- Critical disease (eg, with respiratory failure, shock, or multiorgan dysfunction) was reported in 5 percent.
- The overall case fatality rate was 2.3 percent; no deaths were reported among noncritical cases.

According to a joint World Health Organization (WHO)-China fact-finding mission, the case-fatality rate ranged from 5.8 percent in Wuhan to 0.7 percent in the rest of China [17]. A modeling study suggested that

the adjusted case fatality rate in mainland China was 1.4 percent [51]. Most of the fatal cases occurred in patients with advanced age or underlying medical comorbidities [22,50]. (See '[Risk factors for severe illness](#)' below.)

The proportion of severe or fatal infections may vary by location. As an example, in Italy, 12 percent of all detected COVID-19 cases and 16 percent of all hospitalized patients were admitted to the intensive care unit; the estimated case fatality rate was 7.2 percent in mid-March [52,53]. In contrast, the estimated case fatality rate in mid-March in South Korea was 0.9 percent [54]. This may be related to distinct demographics of infection; in Italy, the median age of patients with infection was 64 years, whereas in Korea the median age was in the 40s. (See '[Impact of age](#)' below.)

Risk factors for severe illness — Severe illness can occur in otherwise healthy individuals of any age, but it predominantly occurs in adults with advanced age or underlying medical comorbidities. The impact of age is discussed elsewhere. (See '[Impact of age](#)' below.)

Comorbidities that have been associated with severe illness and mortality include [22,50,55,56]:

- Cardiovascular disease
- Diabetes mellitus
- Hypertension
- Chronic lung disease
- Cancer
- Chronic kidney disease

The United States Centers for Disease Control and Prevention (CDC) also includes immunocompromising conditions, severe obesity (body mass index ≥ 40), and liver disease as potential risk factors for severe illness [57], although specific data regarding risks associated with these conditions are limited.

In a subset of 355 patients who died with COVID-19 in Italy, the mean number of pre-existing comorbidities was 2.7, and only 3 patients had no underlying condition [53].

Among patients with advanced age and medical comorbidities, COVID-19 is frequently severe. For example, in a SARS-CoV-2 outbreak across several long-term care facilities in Washington State, the median age of the 101 facility residents affected was 83 years, and 94 percent had a chronic underlying condition; the hospitalization and preliminary case fatality rates were 55 and 34 percent, respectively [58].

Males have comprised a disproportionately high number of deaths in cohorts from China and Italy [53,59].

In a number of states in the United States, black individuals also appear to comprise a disproportionately high number of infections and deaths due to COVID-19, possibly related to underlying socioeconomic disparities [60-63].

Particular laboratory features have also been associated with worse outcomes. These include [22,64,65]:

- Lymphopenia

- Elevated liver enzymes
- Elevated lactate dehydrogenase (LDH)
- Elevated inflammatory markers (eg, C-reactive protein [CRP], ferritin)
- Elevated D-dimer (>1 mcg/mL)
- Elevated prothrombin time (PT)
- Elevated troponin
- Elevated creatine phosphokinase (CPK)
- Acute kidney injury

As an example, in one study, progressive decline in the lymphocyte count and rise in the D-dimer over time were observed in nonsurvivors compared with more stable levels in survivors [32].

Patients with severe disease have also been reported to have higher viral RNA levels in respiratory specimens than those with milder disease [21], although this association was not observed in a different study that measured viral RNA in salivary specimens [19].

Impact of age — Individuals of any age can acquire severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, although adults of middle age and older are most commonly affected, and older adults are more likely to have severe disease.

In several cohorts of hospitalized patients with confirmed COVID-19, the median age ranged from 49 to 56 years [32,46,47]. In a report from the Chinese Center for Disease Control and Prevention that included approximately 44,500 confirmed infections, 87 percent of patients were between 30 and 79 years old [50]. Similarly, in a modeling study based on data from mainland China, the hospitalization rate for COVID-19 increased with age, with a 1 percent rate for those 20 to 29 years old, 4 percent rate for those 50 to 59 years old, and 18 percent for those older than 80 years [66].

Older age is also associated with increased mortality. In a report from the Chinese Center for Disease Control and Prevention, case fatality rates were 8 and 15 percent among those aged 70 to 79 years and 80 years or older, respectively, in contrast to the 2.3 percent case fatality rate among the entire cohort [50]. Similar findings were reported from Italy, with case fatality rates of 12 and 20 percent among those aged 70 to 79 years and 80 years or older, respectively [53].

In the United States, 2449 patients diagnosed with COVID-19 between February 12 and March 16, 2020 had age, hospitalization, and intensive care unit (ICU) information available [67]; 67 percent of cases were diagnosed in those aged ≥45 years, and, similar to findings from China, mortality was highest among older individuals, with 80 percent of deaths occurring in those aged ≥65 years.

Symptomatic infection in children appears to be relatively uncommon; when it occurs, it is usually mild, although severe cases have been reported [68-71]. Details of COVID-19 in children are discussed elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Considerations in children](#)".)

Asymptomatic infections — Asymptomatic infections have also been described [43,72-74], but their frequency is unknown.

In a COVID-19 outbreak on a cruise ship where nearly all passengers and staff were screened for SARS-CoV-2, approximately 17 percent of the population on board tested positive as of February 20; about half of the 619 confirmed COVID-19 cases were asymptomatic at the time of diagnosis [75]. A modeling study estimated that 18 percent were true asymptomatic cases (ie, did not go on to develop symptoms), although this was based on a number of assumptions, including the incubation period [76].

Similarly, in a smaller COVID-19 outbreak within a skilled nursing facility, 13 of the of the 23 residents who had a positive screening test were asymptomatic at the time of diagnosis, but 10 of them ultimately developed symptoms over the next seven days [77].

Even patients with asymptomatic infection may have objective clinical abnormalities [27,78]. As an example, in a study of 24 patients with asymptomatic infection who all underwent chest computed tomography (CT), 50 percent had typical ground-glass opacities or patchy shadowing, and another 20 percent had atypical imaging abnormalities [27]. Five patients developed low-grade fever, with or without other typical symptoms, a few days after diagnosis. In another study of 55 patients with asymptomatic infection identified through contact tracing, 67 percent had CT evidence of pneumonia on admission; only two patients developed hypoxia, and all recovered [78].

Clinical manifestations

Initial presentation — Pneumonia appears to be the most frequent serious manifestation of infection, characterized primarily by fever, cough, dyspnea, and bilateral infiltrates on chest imaging [32,42,46,47]. There are no specific clinical features that can yet reliably distinguish COVID-19 from other viral respiratory infections.

In a study describing 138 patients with COVID-19 pneumonia in Wuhan, the most common clinical features at the onset of illness were [32]:

- Fever in 99 percent
- Fatigue in 70 percent
- Dry cough in 59 percent
- Anorexia in 40 percent
- Myalgias in 35 percent
- Dyspnea in 31 percent
- Sputum production in 27 percent

Other cohort studies of patients from Wuhan with confirmed COVID-19 have reported a similar range of clinical findings [32,46,79,80]. However, fever might not be a universal finding. In one study, fever was reported in almost all patients, but approximately 20 percent had a very low grade fever <100.4°F/38°C [46]. In another study of 1099 patients from Wuhan and other areas in China, fever (defined as an axillary

temperature over 99.5°F/37.5°C) was present in only 44 percent on admission but was ultimately noted in 89 percent during the hospitalization [42].

Although not highlighted in the initial cohort studies from China, smell and taste disorders (eg, anosmia and dysgeusia) have also been reported as common symptoms in patients with COVID-19 [81,82]. In a survey of 59 patients with COVID-19 in Italy, 34 percent self-reported either a smell or taste aberration and 19 percent reported both [82]. Whether this is a distinguishing feature of COVID-19 is uncertain.

Other, less common symptoms have included headache, sore throat, and rhinorrhea.

In addition to respiratory symptoms, gastrointestinal symptoms (eg, nausea and diarrhea) have also been reported; and in some patients, they may be the presenting complaint [32,46,83]. In a systematic review of studies reporting on gastrointestinal symptoms in patients with confirmed COVID-19, the pooled prevalence was 18 percent overall, with diarrhea, nausea/vomiting, or abdominal pain reported in 13, 10, and 9 percent, respectively [84].

Course and complications — As above, symptomatic infection can range from mild to critical. (See ['Spectrum of illness severity'](#) above.)

Some patients with initially mild symptoms may progress over the course of a week. In one study of 138 patients hospitalized in Wuhan for pneumonia due to SARS-CoV-2, dyspnea developed after a median of five days since the onset of symptoms, and hospital admission occurred after a median of seven days of symptoms [32]. In another study, the median time to dyspnea was eight days [46].

Acute respiratory distress syndrome (ARDS) is a major complication in patients with severe disease and can manifest shortly after the onset of dyspnea. In the study of 138 patients described above, ARDS developed in 20 percent a median of eight days after the onset of symptoms; mechanical ventilation was implemented in 12.3 percent [32]. In another study of 201 hospitalized patients with COVID-19 in Wuhan, 41 percent developed ARDS; age greater than 65 years, diabetes mellitus, and hypertension were each associated with ARDS [64].

Other complications have included arrhythmias, acute cardiac injury, and shock [32,59,85,86]. In one study, these were reported in 17, 7, and 9 percent, respectively [32]. In a series of 21 severely ill patients admitted to the ICU in the United States, one-third developed cardiomyopathy [85]. Thromboembolic complications have also been reported [87-89]. (See ["Coronavirus disease 2019 \(COVID-19\): Critical care issues", section on 'Clinical features in critically ill patients'.](#))

Some patients with severe COVID-19 have laboratory evidence of an exuberant inflammatory response, similar to cytokine release syndrome, with persistent fevers, elevated inflammatory markers (eg, D-dimer, ferritin), and elevated proinflammatory cytokines; these laboratory abnormalities have been associated with critical and fatal illnesses [46,90]. (See ['Risk factors for severe illness'](#) above.)

According to the WHO, recovery time appears to be around two weeks for mild infections and three to six weeks for severe disease [10].

Laboratory findings — In patients with COVID-19, the white blood cell count can vary. Leukopenia, leukocytosis, and lymphopenia have been reported, although lymphopenia appears most common [13,32,46,47]. Elevated lactate dehydrogenase and ferritin levels are common, and elevated aminotransferase levels have also been described. On admission, many patients with pneumonia have normal serum procalcitonin levels; however, in those requiring ICU care, they are more likely to be elevated [32,46,47].

High D-dimer levels and more severe lymphopenia have been associated with mortality [47].

Imaging findings — Chest radiographs may be normal in early or mild disease. In a retrospective study of 64 patients in Hong Kong with documented COVID-19, 20 percent did not have any abnormalities on chest radiograph at any point during the illness [91]. Common abnormal radiograph findings were consolidation and ground glass opacities, with bilateral, peripheral, and lower lung zone distributions; lung involvement increased over the course of illness, with a peak in severity at 10 to 12 days after symptom onset.

Although chest CT may be more sensitive than chest radiograph and some chest CT findings may be characteristic of COVID-19, no finding can completely rule in or rule out the possibility of COVID-19. In the United States, the American College of Radiology (ACR) recommends not using chest CT for screening or diagnosis of COVID-19 and recommends reserving it for hospitalized patients when needed for management [92]. If CT is performed, the Radiological Society of North America has categorized features as typical, indeterminate, or atypical for COVID-19, and has suggested corresponding language for the interpretation report (table 1) [93].

Chest CT in patients with COVID-19 most commonly demonstrates ground-glass opacification with or without consolidative abnormalities, consistent with viral pneumonia [80,94]. Case series have suggested that chest CT abnormalities are more likely to be bilateral, have a peripheral distribution, and involve the lower lobes. Less common findings include pleural thickening, pleural effusion, and lymphadenopathy.

In a study of 1014 patients in Wuhan who underwent both reverse-transcription polymerase chain reaction (RT-PCR) testing and chest CT for evaluation of COVID-19, a "positive" chest CT for COVID-19 (as determined by a consensus of two radiologists) had a sensitivity of 97 percent, using the PCR tests as a reference; however, specificity was only 25 percent [95]. The low specificity may be related to other etiologies causing similar CT findings. In another study comparing chest CTs from 219 patients with COVID-19 in China and 205 patients with other causes of viral pneumonia in the United States, COVID-19 cases were more likely to have a peripheral distribution (80 versus 57 percent), ground-glass opacities (91 versus 68 percent), fine reticular opacities (56 versus 22 percent), vascular thickening (59 versus 22 percent), and reverse halo sign (11 versus 1 percent), but less likely to have a central and peripheral distribution (14 versus 35 percent), air bronchogram (14 versus 23 percent), pleural thickening (15 versus 33 percent), pleural effusion (4 versus 39 percent), and lymphadenopathy (2.7 versus 10 percent) [96]. A group of radiologists in that study was able to distinguish COVID-19 with high specificity but moderate sensitivity.

In one report of 21 patients with laboratory-confirmed COVID-19 who did not develop severe respiratory distress, lung abnormalities on chest imaging were most severe approximately 10 days after symptom onset

[79]. However, chest CT abnormalities have also been identified in patients prior to the development of symptoms and even prior to the detection of viral RNA from upper respiratory specimens [80,97].

Among patients who clinically improve, resolution of radiographic abnormalities may lag behind improvements in fever and hypoxia [98].

EVALUATION AND DIAGNOSIS

Clinical suspicion and criteria for testing — The possibility of COVID-19 should be considered primarily in patients with new onset fever and/or respiratory tract symptoms (eg, cough, dyspnea). It should also be considered in patients with severe lower respiratory tract illness without any clear cause. Although these syndromes can occur with other viral respiratory illnesses, the likelihood of COVID-19 is increased if the patient:

- Resides in or has traveled within the prior 14 days to a location where there is community transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; ie, large numbers of cases that cannot be linked to specific transmission chains) (see '[Geographic distribution](#)' above); or
- Has had close contact with a confirmed or suspected case of COVID-19 in the prior 14 days, including through work in health care settings. Close contact includes being within approximately six feet (about two meters) of a patient for a prolonged period of time while not wearing personal protective equipment (PPE) or having direct contact with infectious secretions while not wearing PPE.

Patients with suspected COVID-19 who do not need emergency care should be encouraged to call prior to presenting to a health care facility for evaluation. Many patients can be evaluated regarding the need for testing over the phone. For patients in a health care facility, infection control measures should be implemented as soon as the possibility of COVID-19 is suspected. (See '[Infection control for suspected or confirmed cases](#)' below.)

The diagnosis cannot be definitively made without microbiologic testing, but limited capacity may preclude testing all patients with suspected COVID-19. Local health departments may have specific criteria for testing. In the United States, the [Centers for Disease Control and Prevention \(CDC\)](#) and the [Infectious Diseases Society of America](#) have suggested priorities for testing ([table 2](#)); high-priority individuals include hospitalized patients (especially critically ill patients with unexplained respiratory illness), symptomatic health care workers, and symptomatic individuals who have risk factors for severe disease [99,100].

Testing criteria suggested by the World Health Organization (WHO) can be found in its [technical guidance online](#). These are the same criteria used by the [European Centre for Disease Prevention and Control](#).

An approach to suspected cases when testing is not available is discussed elsewhere. (See '[COVID-19 testing not readily available](#)' below.)

Laboratory testing — Patients who meet the testing criteria discussed above should undergo testing for SARS-CoV-2 (the virus that causes COVID-19) in addition to testing for other respiratory pathogens (eg, influenza, respiratory syncytial virus). (See ["Diagnostic approach to community-acquired pneumonia in adults", section on 'Diagnostic testing for microbial etiology'.](#))

In the United States, the CDC recommends collection of a nasopharyngeal swab specimen to test for SARS-CoV-2 [101]. An oropharyngeal swab can be collected but is not essential; if collected, it should be placed in the same container as the nasopharyngeal specimen. Oropharyngeal, nasal mid-turbinate, or nasal swabs (of both nares) are acceptable alternatives for symptomatic patients if nasopharyngeal swabs are unavailable.

Expectorated sputum should be collected from patients with productive cough; induction of sputum is not recommended. A lower respiratory tract aspirate or bronchoalveolar lavage should be collected from patients who are intubated. Additional information on [testing and handling](#) of clinical specimens can be found on the CDC website. Infection control practices during specimen collection are discussed elsewhere. (See ['Infection control for suspected or confirmed cases'](#) below.)

SARS-CoV-2 RNA is detected by reverse-transcription polymerase chain reaction (RT-PCR) [102]. In the United States, testing is performed by the CDC, by local public health departments, by hospitals that have developed and validated their own tests, and by certain commercial reference laboratories.

A positive test for SARS-CoV-2 generally confirms the diagnosis of COVID-19, although false-positive tests are possible.

False-negative tests from upper respiratory specimens have been documented. If initial testing is negative but the suspicion for COVID-19 remains and determining the presence of infection is important for management or infection control, we suggest repeating the test. In such cases, the WHO also recommends testing lower respiratory tract specimens, if possible [103]. Infection control precautions for COVID-19 should continue while repeat evaluation is being performed. (See ['Infection control for suspected or confirmed cases'](#) below.)

The accuracy and predictive values of SARS-CoV-2 testing have not been systematically evaluated, and the sensitivity of testing likely depends on the precise test as well as the type of specimen obtained. Negative RT-PCR tests on oropharyngeal swabs despite CT findings suggestive of viral pneumonia have been reported in some patients who ultimately tested positive for SARS-CoV-2 [97].

Lower respiratory tract specimens may have higher viral loads and be more likely to yield positive tests than upper respiratory tract specimens [16,104]. In a study of 205 patients with COVID-19 who were sampled at various sites, the highest rates of positive viral RNA tests were reported from bronchoalveolar lavage (95 percent, 14 of 15 specimens) and sputum (72 percent, 72 of 104 specimens), compared with oropharyngeal swab (32 percent, 126 of 398 specimens) [16]. Data from this study suggested that viral RNA levels are higher and more frequently detected in nasal compared with oral specimens, although only eight nasal swabs were tested.

Serologic tests, as soon as generally available and adequately evaluated, should be able to identify patients who have either current or previous infection but a negative PCR test [105,106]. In one study that included 58 patients with clinical, radiographic, and epidemiologic features suspicious for COVID-19 but with negative SARS-CoV-2 PCR testing, an IgM enzyme-linked immunosorbent assay (ELISA) was positive in 93 percent (and was negative when tested separately on plasma specimens that predated the COVID-19 outbreak) [105]. In the United States, a serologic test has been approved by the Food and Drug Administration for use by laboratories that are certified to perform moderate- and high-complexity tests [31].

For safety reasons, specimens from a patient with suspected or documented COVID-19 should **not** be submitted for viral culture.

The importance of testing for other pathogens was highlighted in a report of 210 symptomatic patients with suspected COVID-19; 30 tested positive for another respiratory viral pathogen, and 11 tested positive for SARS-CoV-2 [45]. In addition, coinfection with SARS-CoV-2 and other respiratory viruses, including influenza, has been reported [107,108], and this may impact management decisions.

MANAGEMENT

Home management is appropriate for patients with mild infection (eg, fever, cough, and/or myalgias without dyspnea) or asymptomatic infection who can be adequately isolated in the outpatient setting. Management of such patients should focus on prevention of transmission to others and monitoring for clinical deterioration, which should prompt hospitalization. Management of patients who warrant hospitalization consists of ensuring appropriate infection control and supportive care (including oxygenation and potentially ventilatory support for acute respiratory distress syndrome). Investigational approaches are also being evaluated, and should be used in the setting of a clinical trial, whenever available. Management of COVID-19 is discussed in detail elsewhere:

- (See "[Coronavirus disease 2019 \(COVID-19\): Management in adults](#)".)
- (See "[Coronavirus disease 2019 \(COVID-19\): Critical care issues](#)".)

PREVENTION

In the health care setting

Measures for all patients — Screening patients for clinical manifestations consistent with COVID-19 (eg, fever, cough, dyspnea) prior to entry into a health care facility can help identify those who may warrant additional infection control precautions. This can be done over the phone before the patient actually presents to a facility. Routine visits should be postponed for patients with these manifestations; if they need to present for medical care, they should be advised to wear a face cover. Separate waiting areas for patients with respiratory symptoms should be designated, if possible, at least six feet away from the regular waiting areas.

In locations where community transmission is ongoing, postponing all elective procedures or non-urgent visits and using virtual (eg, through video communication) visits may be useful strategies to reduce the risk of exposure in the health care setting [109].

In some settings, such as long-term care facilities, the United States Centers for Disease Control and Prevention (CDC) recommends that standard, contact, and droplet precautions in addition to eye protection be used for any patient with an undiagnosed respiratory infection who is not under consideration for COVID-19 [110]. Some institutions have instituted policies requiring health care workers to wear medical masks in all clinical settings [111]. These strategies may help reduce the risk of spread from unsuspected virus carriers.

Infection control precautions for suspect COVID-19 cases are discussed below.

Infection control for suspected or confirmed cases — Infection control to limit transmission is an essential component of care in patients with suspected or documented COVID-19.

Individuals with suspected infection in the community should be advised to wear a face cover to contain their respiratory secretions prior to seeking medical attention. (See '[Evaluation and diagnosis](#)' above.)

In the health care setting, the World Health Organization (WHO) and CDC recommendations for infection control for suspected or confirmed infections differ slightly:

- [The WHO recommends](#) standard, contact, and droplet precautions (ie, gown, gloves, and medical mask), with eye or face protection [112]. The addition of airborne precautions (ie, respirator) is warranted during aerosol-generating procedures (as detailed below).
- [The CDC recommends](#) that patients with suspected or confirmed COVID-19 be placed in a single-occupancy room with a closed door and dedicated bathroom [109]. An airborne infection isolation room (ie, a single-patient negative pressure room) should be reserved for patients undergoing aerosol-generating procedures (as detailed below). However, patients with suspected or confirmed COVID-19 should not be in a positive-pressure room.

Any personnel entering the room of a patient with suspected or confirmed COVID-19 should wear the appropriate personal protective equipment (PPE): gown, gloves, eye protection, and a respirator (eg, an N95 respirator). If supply of respirators is limited, the CDC acknowledges that medical masks are an acceptable alternative (in addition to contact precautions and eye protection), but respirators should be worn during aerosol-generating procedures [109].

Aerosol-generating procedures include tracheal intubation and extubation, noninvasive ventilation, manual ventilation before intubation, bronchoscopy, administration of high-flow oxygen or nebulized medications, tracheotomy, cardiopulmonary resuscitation, and upper endoscopy. The CDC does not consider nasopharyngeal or oropharyngeal specimen collection an aerosol-generating procedure that warrants an airborne isolation room, but it should be performed in a single-occupancy room with the door closed, and any personnel in the room should wear a respirator (or if unavailable, a medical mask) [109].

Health care workers should pay special attention to the appropriate sequence of putting on ([figure 1](#)) and taking off ([figure 2](#)) PPE to avoid contamination.

Patients with suspected or documented COVID-19 should wear a medical mask if being transported out of the room (eg, for studies that cannot be performed in the room). Some institutions also have patients wear medical masks during prolonged face-to-face encounters while in their room. The efficacy of medical masks in preventing transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is uncertain. In one study, wearing a surgical mask eliminated detectable viral RNA from the exhaled breath of individuals with seasonal coronaviruses (SARS-CoV-2 was not tested) [[113](#)].

The importance of infection control in preventing the spread of SARS-CoV-2 in health care settings has been demonstrated in several studies. In one report of 138 patients with COVID-19 in China, it was estimated that 43 percent acquired infection in the hospital setting [[32](#)]. In Washington State, suboptimal use of infection control procedures contributed to the spread of infection to 81 residents, 34 staff members, and 14 visitors [[33](#)].

Exposures in health care workers — For health care workers who have had a potential exposure to COVID-19, the CDC has provided [guidelines for work restriction and monitoring](#). The approach depends upon the duration of exposure, the patient's symptoms, whether the patient was wearing a medical mask, the type of PPE used by the provider, and whether an aerosol-generating procedure was performed. Some local health departments allow health care workers to return to work following an exposure if they adhere to cough and hand hygiene, wear a medical mask while at the health care facility until 14 days after the exposure, and monitor daily for fever or respiratory symptoms, the presence of which would prompt immediate self-isolation [[114](#)].

Strategies for PPE shortages — Limited availability of personal protective equipment (PPE) has complicated medical care of patients with suspected or documented COVID-19 (and other transmissible conditions) worldwide.

In the United States, the CDC offers [guidance](#) on optimizing the supply of PPE when sudden increases in patient volume threaten a facility's PPE capacity [[115](#)]. Strategies include canceling non-urgent procedures or visits that would warrant use of PPE, prioritizing the use of certain PPE for the highest risk situations, and cautious extended or limited reuse of PPE.

There has also been interest in decontamination of PPE for reuse, in particular for N95 respirators. The [CDC has highlighted](#) three methods for decontamination of respirators when supplies are critically low (crisis standards) [[116](#)]:

- **Ultraviolet light** — Decontamination with ultraviolet (UV) light was evaluated in the context of the H1N1 influenza pandemic; in experimental models, UV irradiation was observed to reduce H1N1 influenza viability on N95 respirator surfaces at doses below the threshold observed to impair the integrity of the respirator [[117-119](#)]. Coronaviruses can also be inactivated by UV irradiation, but comparable studies have not been performed with SARS-CoV-2, and the dose needed to inactivate the virus on a respirator

surface is unknown. Nebraska Medicine has implemented a [protocol](#) for UV irradiation of N95 respirators in the context of the COVID-19 pandemic based on the dose generally needed to inactivate other single-stranded RNA viruses on surfaces [\[120\]](#).

- **Hydrogen peroxide vapor** – Hydrogen peroxide vapor has been observed to inactivate other non-coronavirus single-stranded RNA viruses on environmental surfaces [\[121,122\]](#). Duke University Health System has created an in-house protocol using hydrogen peroxide vapor for N95 decontamination [\[123\]](#). In some regions, plans for large-scale decontamination (eg, tens of thousands of respirators daily) with hydrogen peroxide vapor with proprietary machinery are underway [\[124\]](#).
- **Moist heat** – Moist heat has been observed to reduce the concentration of H1N1 influenza virus on N95 respirator surfaces [\[118\]](#). In this study, moist heat was applied by preparing a container with 1 L of tap water in the bottom and a dry horizontal rack above the water; the container was sealed and warmed in an oven to 65°C/150°F for at least three hours; it was then opened, the respirator placed on the rack, and the container resealed and placed back in the oven for an additional 30 minutes. No residual H1N1 infectivity was found. The optimal time and temperature to inactivate SARS-CoV-2 are uncertain; several studies observed inactivation of SARS-CoV after 30 to 60 minutes at 60°C/140°F [\[125-127\]](#).

Equipment used for protection in other industries is also being explored as an alternative to standard health care PPE, such as elastometric half-mask respirators in place of N95 respirators [\[128\]](#).

Discontinuation of precautions — The decision to discontinue infection control precautions for hospitalized patients with COVID-19 should be made on a case-by-case basis in consultation with experts in infection prevention and control and public health officials. In the United States, the CDC recommends that hospitalized patients meet all of the following criteria before discontinuation of precautions: resolution of fever (without antipyretics), improvement in respiratory symptoms, and two negative reverse-transcription polymerase chain reaction (RT-PCR) tests for SARS-CoV-2 on sequential nasopharyngeal specimens collected ≥ 24 hours apart [\[129\]](#). Although a non-test-based strategy (ie, that allows discontinuation of precautions after specific time intervals since symptom onset and symptom resolution) may be appropriate for patients managed at home, this test-based strategy is preferred for hospitalized patients and those being transferred to a long-term care facility. If patients are ready to be discharged home prior to meeting criteria for discontinuation of precautions, they can be sent home with instructions to self-isolate until they meet either test-based or non-test-based criteria. (See "[Coronavirus disease 2019 \(COVID-19\): Management in adults](#)", [section on 'Home care'](#).)

Whether a test-based strategy reliably identifies patients who are no longer infectious is unknown. Positive RT-PCR tests for SARS-CoV-2 RNA were reported in laboratory-confirmed COVID-19 patients after they had clinically improved and tested negative on two consecutive tests [\[130\]](#). Another report described 22 patients with COVID-19 who had detectable viral RNA in fecal and/or sputum specimens for up to 13 and 39 days, respectively, even though the viral RNA was no longer detectable in pharyngeal specimens [\[131\]](#). The clinical significance of these findings is uncertain; it is unknown whether these individuals continued to shed infectious virus.

Environmental disinfection — To help reduce the spread of COVID-19 virus, environmental infection control procedures should also be implemented [109,112,132-134]. In United States health care settings, the CDC states routine cleaning and disinfection procedures are appropriate for COVID-19 virus [109].

Products approved by the Environmental Protection Agency (EPA) for emerging viral pathogens should be used; a list of EPA-registered products can be found [here](#). Specific guidance on environmental measures, including those used in the home setting, is available on the [CDC](#) and [WHO](#) websites. Additional information is also found in a separate topic review. (See "[Coronaviruses](#)", [section on 'Treatment and prevention'](#).)

The importance of environmental disinfection was illustrated in a study from Singapore, in which viral RNA was detected on nearly all surfaces tested (handles, light switches, bed and handrails, interior doors and windows, toilet bowl, sink basin) in the airborne infection isolation room of a patient with symptomatic mild COVID-19 prior to routine cleaning [135]. Viral RNA was not detected on similar surfaces in the rooms of two other symptomatic patients following routine cleaning (with sodium dichloroisocyanurate). Of note, viral RNA detection does not necessarily indicate the presence of infectious virus.

It is unknown how long SARS-CoV-2 can persist on surfaces [12,134,136]; other coronaviruses have been tested and may survive on inanimate surfaces for up to six to nine days without disinfection. In a study evaluating the survival of viruses dried on a plastic surface at room temperature, a specimen containing SARS-CoV (a virus closely related to SARS-CoV-2) had detectable infectivity at six but not nine days [136]. However, in a systematic review of similar studies, various disinfectants (including ethanol at concentrations between 62 and 71 percent) inactivated a number of coronaviruses related to SARS-CoV-2 within one minute [134].

Preventing exposure in the community — If community transmission of SARS-CoV-2 is present, residents should be encouraged to practice social distancing by staying home as much as possible and maintaining six feet (two meters) distance from others when they have to leave home. In particular, individuals should avoid crowds and close contact with ill individuals.

The following general measures are additionally recommended to reduce transmission of infection:

- Diligent hand washing, particularly after touching surfaces in public. Use of hand sanitizer that contains at least 60 percent alcohol is a reasonable alternative if the hands are not visibly dirty.
- Respiratory hygiene (eg, covering the cough or sneeze).
- Avoiding touching the face (in particular eyes, nose, and mouth). The American Academy of Ophthalmology suggests that people not wear contact lenses, because they make people touch their eyes more frequently [137].
- Cleaning and disinfecting objects and surfaces that are frequently touched. The CDC has issued [guidance](#) on disinfection in the home setting; a list of EPA-registered products can be found [here](#).

These measures should be followed by all individuals, but should be emphasized for older adults and individuals with chronic medical conditions, in particular.

For people without respiratory symptoms, the WHO does not recommend wearing a medical mask in the community, since it does not decrease the importance of other general measures to prevent infection and may result in unnecessary cost and supply problems; the WHO also emphasizes that medical masks should be prioritized for health care workers [138]. Recommendations on use of masks by healthy members of the community vary by country [139].

In the United States, the CDC updated its recommendations in early April to advise individuals to wear a cloth face covering (eg, homemade masks or bandanas) when in public settings where social distancing is difficult to achieve, especially in areas with substantial community transmission [140]. Individuals should be counseled to avoid touching the eyes, nose, and mouth when removing the covering, practice hand hygiene after handling it, and launder it routinely. Clinicians should emphasize that the face covering does not diminish the importance of other preventive measures, such as social distancing and hand hygiene. The rationale for the face covering is primarily to contain secretions of and prevent transmission from individuals who have asymptomatic or presymptomatic infection. The CDC also reiterates that the face covering recommendation does not include medical masks, which should be reserved for health care workers.

Individuals who are caring for patients with suspected or documented COVID-19 at home should also wear a face cover when in the same room as that patient (if the patient cannot wear a face cover).

Individuals who develop an acute respiratory illness (eg, with fever and/or respiratory symptoms) should be encouraged to self-isolate at home for the duration of the illness and wear a face cover if they have to be around other people. Some may warrant evaluation for COVID-19. (See '[Clinical suspicion and criteria for testing](#)' above.)

As above, the efficacy of masks in containing SARS-CoV-2 is uncertain. (See '[Infection control for suspected or confirmed cases](#)' above.)

The CDC has included recommended measures to prevent spread in the community on its [website](#).

Managing asymptomatic non-health care workers with potential exposure — In areas where SARS-CoV-2 is prevalent, all residents should be encouraged to stay alert for symptoms and practice social distancing by staying home as much as possible and maintaining six feet (two meters) distance from others when they have to leave the home.

In the United States, the CDC suggests this approach for all residents [141]. For those returning from [international travel](#) (including cruise ship travel) and those who have had [close contact](#) with a patient with suspected or confirmed COVID-19 (including during the 48 hours prior to that patient developing symptoms), the CDC suggests [141,142]:

- Self-quarantine at home for 14 days following the last exposure, with maintenance of at least six feet (two meters) from others at all times.

- Avoiding contact with individuals at high risk for severe illness (unless they are household members with the same exposure). (See ['Risk factors for severe illness'](#) above.)
- Twice-daily temperature checks with monitoring for fever, cough, or dyspnea. If they develop such clinical manifestations, they should continue to stay at home away from other household members and contact their medical providers. (See ["Coronavirus disease 2019 \(COVID-19\): Management in adults", section on 'Home care'.](#))

For asymptomatic individuals who are critical infrastructure workers, the CDC has provided guidance on returning to work during the 14-day post-exposure period with symptom and temperature monitoring, mask use, social distancing, and workspace disinfection [\[143\]](#)

Global public health measures — On January 30, 2020, the WHO declared the COVID-19 outbreak a public health emergency of international concern and, in March 2020, began to characterize it as a pandemic in order to emphasize the gravity of the situation and urge all countries to take action in detecting infection and preventing spread. The WHO has indicated three priorities for countries: protecting health workers, engaging communities to protect those at highest risk of severe disease (eg, older adults and those with medical comorbidities), and supporting vulnerable countries in containing infection [\[10\]](#).

The WHO does not recommend international travel restrictions but does acknowledge that movement restriction may be temporarily useful in some settings. The WHO advises exit screening for international travelers from areas with ongoing transmission of COVID-19 virus to identify individuals with fever, cough, or potential high-risk exposure [\[144,145\]](#). Many countries also perform entry screening (eg, temperature, assessment for signs and symptoms). More detailed travel information is available on the [WHO website](#).

In the United States, the CDC currently recommends that individuals avoid all nonessential [international](#) travel and nonessential travel from [some domestic locations](#) [\[146\]](#). Because risk of travel changes rapidly, travelers should check United States government websites for possible restrictions.

Investigational approaches

Vaccines — Numerous vaccine candidates are being evaluated for prevention of COVID-19. The first vaccine to undergo preliminary study in humans in the United States uses a messenger RNA platform to result in expression of the viral spike protein in order to induce an immune response [\[147\]](#).

There is also interest in Bacille-Calmette-Guerin (BCG) immunization for prevention of COVID-19, and clinical trials are underway to evaluate its use among health care workers [\[148\]](#). Studies have suggested that, although its primary purpose is prevention of tuberculosis, BCG immunization induces a nonspecific immune response that may have protective effects against non-mycobacterial, including viral, infections [\[149,150\]](#). Any impact of BCG immunization on COVID-19 specifically is unknown.

Post-exposure prophylaxis — Clinical trials are also being conducted in the United States and elsewhere to evaluate the safety and efficacy of post-exposure drug prophylaxis against COVID-19

[151,152]. No agent is known to be effective in preventing infection, we suggest post-exposure prophylaxis not be attempted outside a clinical trial.

SPECIAL SITUATIONS

Pregnant and breastfeeding women — The general approach to prevention, evaluation, diagnosis, and treatment of pregnant women with suspected COVID-19 is largely similar to that in nonpregnant individuals. Issues specific to pregnant and breastfeeding women are discussed elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Pregnancy issues](#)".)

Children — Symptomatic infection in children appears to be relatively uncommon; when it occurs, it is usually mild, although severe cases have been reported [68-71]. Details of COVID-19 in children are discussed elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Considerations in children](#)".)

COVID-19 testing not readily available — In some cases, testing for COVID-19 may not be accessible, particularly for individuals who have a compatible but mild illness that does not warrant hospitalization and do not have a known COVID-19 exposure or high-risk travel history.

In the United States, there is limited official guidance for this situation, and the approach may depend on the prevalence of COVID-19 in the area. If the clinician has sufficient concern for possible COVID-19 (eg, there is community transmission), it is reasonable to assume the patient had COVID-19 and advise the patient to self-isolate at home (if hospitalization is not warranted) and alert the clinician about worsening symptoms. Outpatient management of COVID-19 is discussed in detail elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Management in adults](#)", [section on 'Home care'](#)".)

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See "[Society guideline links: Coronavirus disease 2019 \(COVID-19\) – International and government guidelines for general care](#)" and "[Society guideline links: Coronavirus disease 2019 \(COVID-19\) – Guidelines for specialty care](#)".)

INFORMATION FOR PATIENTS

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the

10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topics (see ["Patient education: Coronavirus disease 2019 \(COVID-19\) overview \(The Basics\)"](#) and ["Patient education: Coronavirus disease 2019 \(COVID-19\) and pregnancy \(The Basics\)"](#) and ["Patient education: Coronavirus disease 2019 \(COVID-19\) and children \(The Basics\)"](#))

SUMMARY AND RECOMMENDATIONS

- In late 2019, a novel coronavirus, now designated SARS-CoV-2, was identified as the cause of an outbreak of acute respiratory illness in Wuhan, a city in China. In February 2020, the World Health Organization (WHO) designated the disease COVID-19, which stands for coronavirus disease 2019. (See ['Introduction'](#) above.)
- Since the first reports of COVID-19, infection has spread to include more than a million confirmed cases [worldwide](#), prompting the WHO to declare a public health emergency in late January 2020 and characterize it as a pandemic in March 2020. (See ['Epidemiology'](#) above.)
- The possibility of COVID-19 should be considered primarily in patients with fever and/or respiratory tract symptoms who reside in or have traveled to areas with community transmission or who have had recent close contact with a confirmed or suspected case of COVID-19. Clinicians should also be aware of the possibility of COVID-19 in patients with severe respiratory illness when no other etiology can be identified. Limitations in testing capacity may preclude testing all patients with suspected infection; suggested priorities include hospitalized patients, symptomatic health care workers, and symptomatic individuals who have risk factors for severe disease ([table 2](#)). (See ['Clinical features'](#) above and ['Evaluation and diagnosis'](#) above.)
- In addition to testing for other respiratory pathogens, a nasopharyngeal swab specimen should be collected for reverse-transcription polymerase chain reaction (RT-PCR) testing for SARS-CoV-2. (See ['Evaluation and diagnosis'](#) above.)
- Upon suspicion of COVID-19, infection control measures should be implemented and public health officials notified. In health care settings in the United States, the Centers for Disease Control and Prevention (CDC) recommends a single-occupancy room for patients and gown, gloves, eye protection, and a respirator (or medical mask as an alternative) for health care personnel ([figure 1](#) and [figure 2](#)). (See ['Infection control for suspected or confirmed cases'](#) above.)
- Management consists of supportive care, although investigational approaches are being evaluated. Home management is appropriate for patients with mild illness who can be adequately isolated in the

outpatient setting. A minority of patients need critical care. Home, hospital, and intensive care unit management of patients with COVID-19 is discussed in detail elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Management in adults](#)" and "[Coronavirus disease 2019 \(COVID-19\): Critical care issues](#)".)

- To reduce the risk of transmission in the community, individuals should be advised to wash hands diligently, practice respiratory hygiene (eg, cover their cough), and avoid crowds and close contact with ill individuals, if possible. Social distancing is recommended in locations that have community transmission. In some locations, face coverings are advised in public settings. (See '[Preventing exposure in the community](#)' above.)
- Interim guidance has been issued by the [WHO](#) and by the [CDC](#). These are updated on an ongoing basis. (See '[Society guideline links](#)' above.)

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GRAPHICS

Proposed reporting language for CT findings related to COVID-19

Routine screening CT for diagnosis or exclusion of COVID-19 is currently not recommended by most professional organizations or the US Centers for Disease Control and Prevention			
COVID-19 pneumonia imaging classification	Rationale	CT findings	Suggested reporting language
Typical appearance	Commonly reported imaging features of greater specificity for COVID-19 pneumonia.	<ul style="list-style-type: none"> Peripheral, bilateral, GGO with or without consolidation or visible intralobular lines ("crazy-paving") Multifocal GGO of rounded morphology with or without consolidation or visible intralobular lines ("crazy-paving") Reverse halo sign or other findings of organizing pneumonia (seen later in the disease) 	"Commonly reported imaging features of (COVID-19) pneumonia are present. Other processes such as influenza pneumonia and organizing pneumonia, as can be seen with drug toxicity and connective tissue disease, can cause a similar imaging pattern."
Indeterminate appearance	Nonspecific imaging features of COVID-19 pneumonia.	<ul style="list-style-type: none"> Absence of typical features AND Presence of: <ul style="list-style-type: none"> Multifocal, diffuse, perihilar, or unilateral GGO with or without consolidation lacking a specific distribution and are non-rounded or non-peripheral. Few very small GGO with a non-rounded and non-peripheral distribution. 	"Imaging features can be seen with (COVID-19) pneumonia, though are nonspecific and can occur with a variety of infectious and noninfectious processes."
Atypical appearance	Uncommonly or not reported features of COVID-19 pneumonia.	<ul style="list-style-type: none"> Absence of typical or indeterminate features AND Presence of: <ul style="list-style-type: none"> Isolated lobar or segmental consolidation without GGO Discrete small nodules (centrilobular, "tree-in-bud") Lung cavitation Smooth interlobular septal thickening with pleural effusion 	"Imaging features are atypical or uncommonly reported for (COVID-19) pneumonia. Alternative diagnoses should be considered."
Negative for pneumonia	No features of pneumonia.	<ul style="list-style-type: none"> No CT features to suggest pneumonia. 	"No CT findings present to indicate pneumonia. (NOTE: CT may be negative in the early stages of COVID-19.)"
NOTES: <ol style="list-style-type: none"> Inclusion in a report of items noted in parenthesis in the Suggested reporting language column may depend upon clinical suspicion, local prevalence, patient status as a PUI, and local procedures regarding reporting. CT is not a substitute for RT-PCR, consider testing according to local recommendations and procedures for and availability of RT-PCR. 			

Proposed reporting language for CT findings related to COVID-19, including rationale, CT findings, and suggested reporting language for each category. Associated CT findings for each category are based upon available literature at the time of writing in March 2020, noting the retrospective nature of many reports, including biases related to patient selection in cohort studies, examination timing, and other potential confounders.

COVID-19: coronavirus disease 2019; CT: computed tomography; GGO: ground-glass opacity; PUI: person under investigation; RT-PCR: reverse transcription polymerase chain reaction.

From: Simpson S, Kay FU, Abbara S, et al. Radiological Society of North America Expert Consensus Statement on Reporting Chest CT Findings Related to COVID-19. Endorsed by the Society of Thoracic Radiology, the American College of Radiology, and RSNA. Radiology:

Graphic 127760 Version 1.0

Suggested priorities for SARS-CoV-2 (COVID-19) testing

Priority	CDC guidance ^[1]	IDSA guidance ^[2]
First	<ul style="list-style-type: none"> Hospitalized patients Symptomatic health care workers 	<ul style="list-style-type: none"> Critically ill patients receiving ICU-level care with unexplained viral pneumonia or respiratory failure (regardless of travel or exposure history) Any individual (including health care workers) with fever or features of a lower respiratory tract illness and close contact with patients with laboratory-confirmed COVID-19 within 14 days of symptom onset (including all residents of long-term care facilities with a confirmed case) Individuals with fever or features of a lower respiratory tract illness who are also immunosuppressed (including patients with HIV), older, or have underlying chronic health conditions Individuals with fever or features of a lower respiratory tract illness who are critical to the pandemic response, including health care workers, public health officials, and other essential leaders
Second	<ul style="list-style-type: none"> Patients in long-term care facilities with symptoms Patients 65 years of age and older with symptoms Patients with underlying conditions with symptoms First responders with symptoms 	<ul style="list-style-type: none"> Non-ICU hospitalized patients and long-term care residents with unexplained fever and features of a lower respiratory tract illness*¶
Third	<ul style="list-style-type: none"> Critical infrastructure workers with symptoms Individuals who do not meet any of the above categories with symptoms Health care workers and first responders without symptoms Individuals with mild symptoms in communities experiencing high COVID-19 hospitalizations 	<ul style="list-style-type: none"> Outpatients who meet criteria for influenza testing (eg, symptoms such as fever, cough, and other suggestive respiratory symptoms plus comorbid conditions, such as diabetes mellitus, chronic obstructive pulmonary disease, congestive heart failure, age >50 years, immunocompromising conditions); testing of outpatient pregnant women and symptomatic children with similar risk factors is also included in this priority level*
Fourth	<ul style="list-style-type: none"> Individuals without symptoms (non-priority) 	<ul style="list-style-type: none"> Community surveillance as directed by public health and/or infectious diseases authorities

SARS-CoV-2: severe acute respiratory syndrome coronavirus 2; COVID-19: coronavirus disease 2019; CDC: United States Centers for Disease Control and Prevention; IDSA: Infectious Diseases Society of America; ICU: intensive care unit.

* The number of confirmed COVID-19 cases in the community should be considered.

¶ As testing becomes more widely available, routine testing of hospitalized patients may be important for infection prevention and management at discharge.

References:

- Centers for Disease Control and Prevention. Evaluating and Testing Persons for Coronavirus Disease 2019 (COVID-19). Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-criteria.html> (Accessed on March 26, 2020).
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Putting on personal protective equipment

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. Gown

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back.
- Fasten in back of neck and waist.



2. Mask or respirator

- Secure ties or elastic bands at middle of head and neck.
- Fit flexible band to nose bridge.
- Fit snug to face and below chin.
- Fit-check respirator.



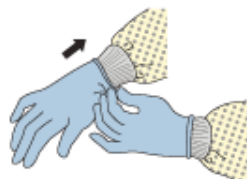
3. Goggles or face shield

- Place over face and eyes and adjust to fit.



4. Gloves

- Extend to cover wrist of isolation gown.



Use safe work practices to protect yourself and limit the spread of contamination

- Keep hands away from face.
- Limit surfaces touched.
- Change gloves when torn or heavily contaminated.
- Perform hand hygiene.

Sequence for putting on personal protective equipment.

Reproduced from: Centers for Disease Control and Prevention. Protecting Healthcare Personnel: Sequence for Donning and Removing Personal Protective Equipment. Available at:

<https://www.cdc.gov/hai/prevent/ppe.html> (Accessed on March 20, 2020).

Graphic 127473 Version 1.0

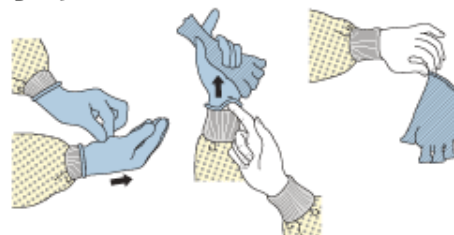
Taking off personal protective equipment

Example 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. Gloves

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove.
- Hold removed glove in gloved hand.
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove.
- Discard gloves in a waste container.



2. Goggles or face shield

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Remove goggles or face shield from the back by lifting head band or ear pieces.
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container.



3. Gown

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties.
- Pull gown away from neck and shoulders, touching inside of gown only.
- Turn gown inside out.
- Fold or roll into a bundle and discard in a waste container.



4. Mask or respirator

- Front of mask/respirator is contaminated. **DO NOT TOUCH!**
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front.
- Discard in a waste container.



5. Wash hands or use an alcohol-based hand sanitizer immediately after removing all PPE



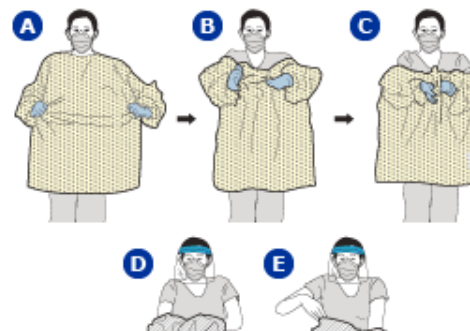
Perform hand hygiene between steps if hands become contaminated and immediately after removing all PPE

Example 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. Gown and gloves

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands.
- While removing the gown, fold or roll the gown inside-out into a bundle.
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container.





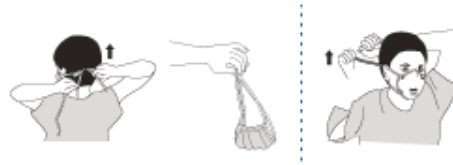
2. Goggles or face shield

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield.
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container.



3. Mask or respirator

- Front of mask/respirator is contaminated. **DO NOT TOUCH!**
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer.
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front.
- Discard in a waste container.



4. Wash hands or use an alcohol-based hand sanitizer immediately after removing all PPE



Perform hand hygiene between steps if hands become contaminated and immediately after removing all PPE

Reproduced from: Centers for Disease Control and Prevention. Protecting Healthcare Personnel: Sequence for Donning and Removing Personal Protective Equipment. Available at: <https://www.cdc.gov/hai/prevent/ppe.html> (Accessed on March 20, 2020).

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Contributor Disclosures

Kenneth McIntosh, MD Nothing to disclose **Martin S Hirsch, MD** Nothing to disclose **Allyson Bloom, MD** Nothing to disclose

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[Conflict of interest policy.](#)

Exhibit AA



Coronavirus Disease 2019

Older Adults

Older adults and people who have severe underlying medical conditions like heart or lung disease or diabetes seem to be at higher risk for developing more serious complications from COVID-19 illness.



Reduce Your Risk of Getting Sick

There are things you can do to **reduce your risk of getting sick**.

- Stay home if possible.
- Wash your hands often.
- Take everyday precautions to keep space between yourself and others (stay 6 feet away, which is about two arm lengths).
- See also: [What You Can Do](#)

See also: [How to Protect Yourself](#)



Coping and Stress

You may feel **increased stress** during this pandemic. Fear and anxiety can be overwhelming and cause strong emotions.

See also: [Stress & Coping](#)



Symptoms

Symptoms of COVID-19 can range from mild symptoms to severe illness and death. Symptoms may **appear** 2-14 days after exposure.

Watch for **fever, cough, and shortness of breath**.

See also: [Symptoms and Testing](#)




Develop a Care Plan

A care plan summarizes your health conditions, medications, healthcare providers, emergency contacts, and end-of-life care options (for example, advance directives). Complete your care plan in consultation with your doctor, and if needed, with help from a family member or home nurse aide.

A care plan can have benefits beyond the current pandemic. You can update your care plan every year, or any time you have a change in your health or medications. Care plans can help reduce emergency room visits and hospitalizations, and improve overall medical management for people with a chronic health condition, resulting in better quality of life.

During the COVID-19 pandemic, having a care plan is an important part of emergency preparedness.

- [Guidance on how to develop your emergency preparedness care plan.](#)
- [Download a fillable care plan form](#)  [5 pages]



Senior Living Facilities

People with loved ones in nursing homes, assisted living facilities, and other types of senior living facilities may be understandably concerned about their loved one's risk of illness from COVID-19.

To protect these vulnerable friends and family members, CDC has advised that long-term care facilities

- restrict visitors,
- regularly check healthcare workers and residents for fevers and symptoms, and
- limit activities within the facility to keep residents safe.

8 out of 10 deaths reported in the U.S. have been in adults 65 years old and older

Among adults with confirmed COVID-19 reported in the U.S.:

- Estimated percent **requiring hospitalization**
 - 31-70% of adults 85 years old and older
 - 31-59% of adults 65-84 years old
- Estimated percent requiring **admission to intensive care unit**
 - 6-29% of adults 85 years old and older
 - 11-31% of adults 65-84 years old
- Estimated percent **who died**
 - 10-27% of adults 85 years old and older
 - 4-11% of adults 65-84 years old

COVID-19: What older adults need to know

Jay Butler, Deputy Director for Infectious Diseases at CDC, describes preventative measures to help protect older adults from COVID-19.

AARP's coronavirus information tele-town hall



CDC and other federal experts presented at an AARP tele-town hall event held on March 10, 2020 discussing

Other resources

[People at Higher Risk](#)

[Prevent Getting Sick](#)

[If You Are Sick](#)

[Symptoms & Testing](#)

[Cases & Latest Updates](#)

Page last reviewed: April 7, 2020

Exhibit B



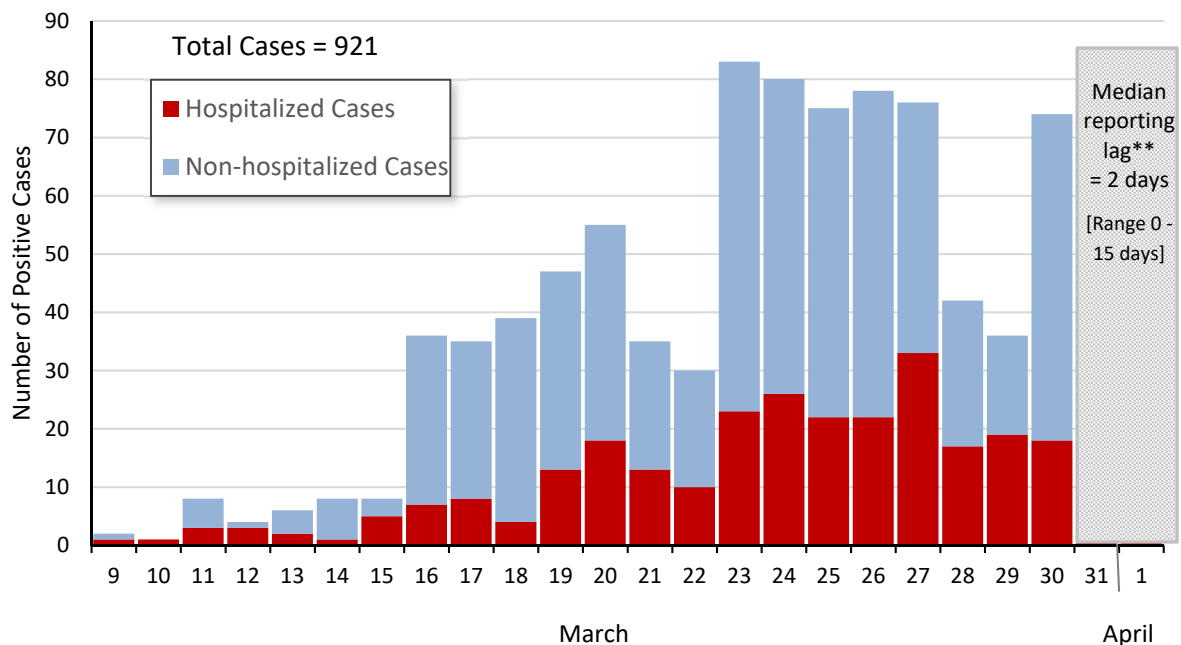
Dallas County Health and Human Services 2019 Novel Coronavirus (COVID-19) Summary

April 3, 2020

- As of 10:00 am April 3, 2020, DCHHS is reporting 90 additional positive cases of 2019 novel coronavirus (COVID-19), bringing the total case count in Dallas County to 921, including 17 deaths.
- The numbers of intensive care unit hospitalizations from COVID-19 from this past week have exceeded the peak week of ICU hospitalizations from influenza this past 2019-2020 season in Dallas County.
- Of cases requiring hospitalization, about three-quarters (71%) have been either over 60 years of age or have had at least one known high-risk chronic health condition. Diabetes has been an underlying high-risk health condition reported in over a quarter (28%) of all hospitalized patients with COVID-19.
- 34 COVID-19 cases associated with 5 long-term care facilities, including 3 deaths, have been reported to date.
- New COVID-19 cases are reported as a daily aggregate, with detailed summaries updated Tuesdays and Fridays.

Figure 1. Daily COVID-19 Cases by Date of Test Collection, Dallas County: March 10, 2020 – April 2, 2020*

*The data in this summary reflect cumulative data received as of 7:00 pm, April 2, 2020. All data are preliminary and subject to change as cases represented are being actively investigated, and may be updated between press releases. Includes only cases in Dallas County residents.



** Reporting lag = Time from specimen collection to receipt of test results

Table 1. Cumulative COVID-19 Cases by Age Groups and Gender, Dallas County

Age Group	# Cases (N=921)	% of Total Cases
0 to 17	10	1.1%
18 to 40	341	37.0%
41 to 60	330	35.8%
over 60	240	26.1%
Sex		
Female	411	44.6%
Male	510	55.4%

Table 2. Source of Laboratory Testing for Reported COVID-19 Positive Cases, Dallas County

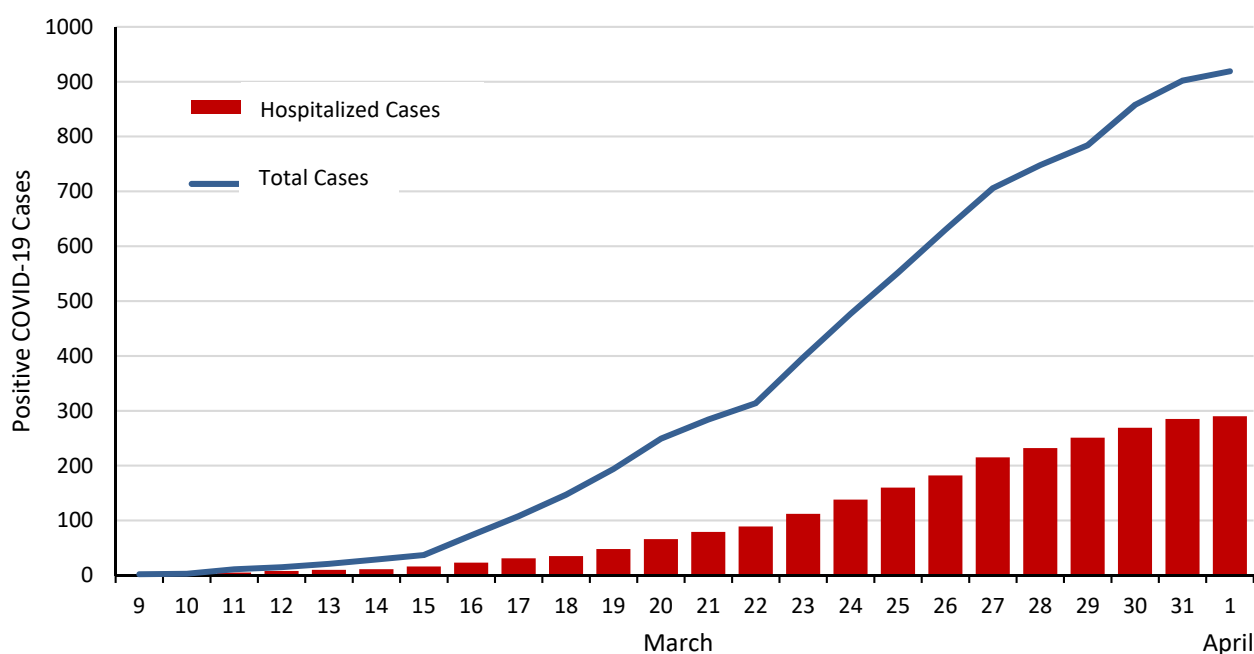
Source of Laboratory Testing for Reported Positive Tests	# Tests (N=921)	% of Total Cases
Commercial or Hospital Laboratory*	832	90.3%
Dallas LRN Laboratory	82	8.9%
Other Public Health Laboratory	7	0.8%

* Includes: ARUP, CPL, Excelsior, LabCorp, Magnolia, Medfusion, Prism, Quest, Viracor, and multiple in-house hospital laboratories

Table 3. Non-COVID-19 Respiratory Virus Testing by North Texas Labs Reported to NREVSS, CDC Week 13

Virus	# Labs Reporting	Total Tests	Total Positive	% Tests Positive
Influenza	2	347	7	2.0
Seasonal (non-SARS-2) Coronavirus	2	212	10	4.7
Adenovirus (respiratory)	2	212	15	7.1
HMPV	2	212	39	18.4
Rhinovirus/Enterovirus	2	212	45	21.2
RSV	2	278	5	1.8

Data source: National Respiratory and Enteric Virus Surveillance System (NREVSS) and hospitals reporting directly to DCHHS

Figure 2. Cumulative COVID-19 Cases and Hospitalizations in Dallas County: March 10, 2020 – April 2, 2020*
by Date of Specimen Collection


*The data in this summary reflect cumulative data received as of 7:00 pm, April 2, 2020. All data are preliminary and subject to change as cases represented are being actively investigated, and may be updated between press releases. Includes only cases in Dallas County residents.

Table 4. Transmission Risk Factors for Cumulative COVID-19 Cases, Dallas County

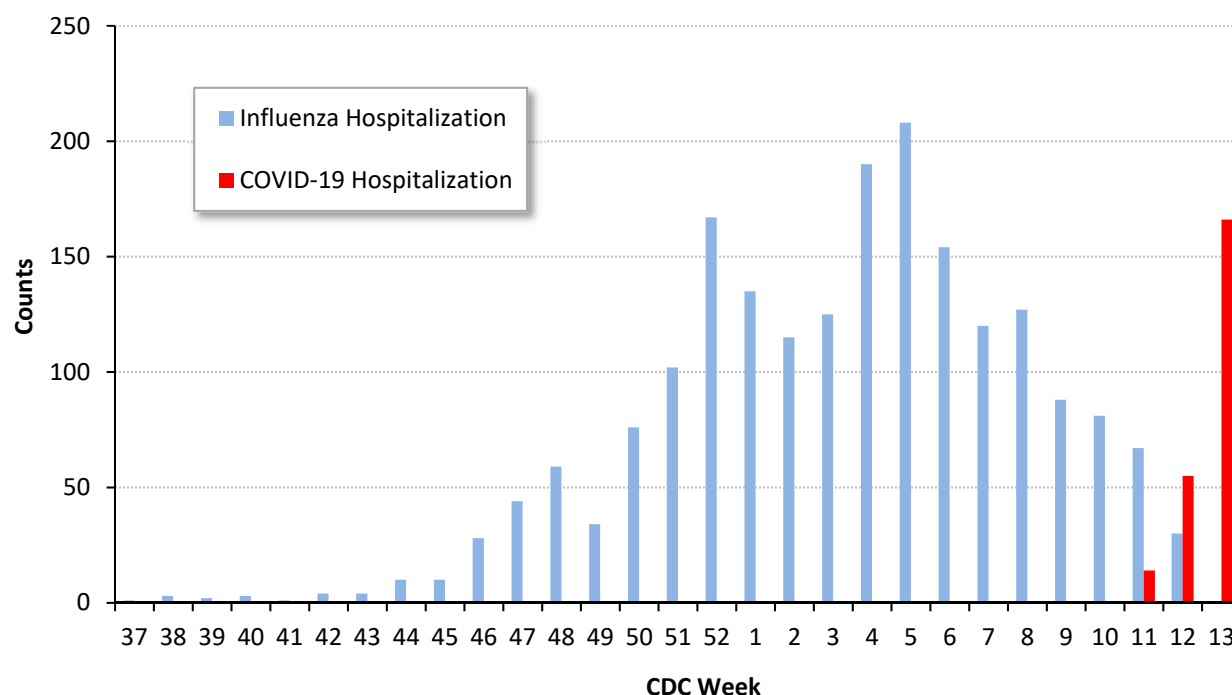
Exposure Risk Factor	Cases (N= 921)	%
International Travel	47	6.7%
Domestic Travel (out-of-state)	79	9.4%
Cruise Ship Travel	5	0.8%
Long Term Care Facility	34	4.4%
Jail	22	1.7%
Close contact or Presumed Community Transmission*	480	76.1%

*Includes: household transmission, and cases with no other exposure risk factors identified

Table 5. COVID-19 Case Characteristics, Dallas County: March 10, 2020 – April 2, 2020

	Non-Hospitalized Cases	%
<i>Not Hospitalized</i>	N = 631	69% of Total Cases
Outpatient/ Urgent Care/ Drive-through	481	76%
Emergency Department only	150	24%

	Hospitalized Cases	%
<i>Ever Hospitalized</i>	N = 290	31% of Total Cases
Admitted to Intensive Care Unit	89	31%
Mechanical Ventilation	56	19%
≥60 yrs age or Presence of ≥1 high risk condition	206	71%
Presence of ≥1 high risk condition	157	54%
Diabetes	82	28%
Lung Disease (e.g. COPD, asthma)	35	12%
Heart Disease (e.g. CHF)	33	11%
Kidney Disease (e.g. ESRD, dialysis)	21	7%
Cancer, Immune-compromise	14	5%
Pregnancy	3	1%
Deaths	13	2% of Total Cases

Figure 3. Influenza and COVID-19 Hospitalizations by Week of Admission, Dallas County: September 2019 through week ending March 28, 2020 (CDC Week 13)*


*The data in this summary reflect cumulative data received as of 7:00 pm, April 2, 2020. All data are preliminary and subject to change as cases represented are being actively investigated, and may be updated between press releases. Includes only cases in Dallas County residents.

Table 6. Summary of Influenza and COVID-19 Hospitalizations and Deaths from Dallas County Hospitals, Vital Statistics and Medical Examiner's Office

Week Ending	02/29	03/07	03/14	03/21	03/28	04/04	9/08/19– Present
CDC Week	9	10	11	12	13*	14*	
Influenza hospitalizations ¹	88	81	67	30	N/A	N/A	1,990
Influenza ICU admissions ¹	8	9	7	7	N/A	N/A	281
Confirmed influenza-associated deaths ²	0	2	0	0	N/A	N/A	19
COVID-19 hospitalizations ³	0	0	14	55	166*	55*	235
COVID-19 ICU admissions ³	0	0	6	20	47*	16*	73
Confirmed COVID-19-associated deaths ⁴	0	0	0	2	10*	5*	17*

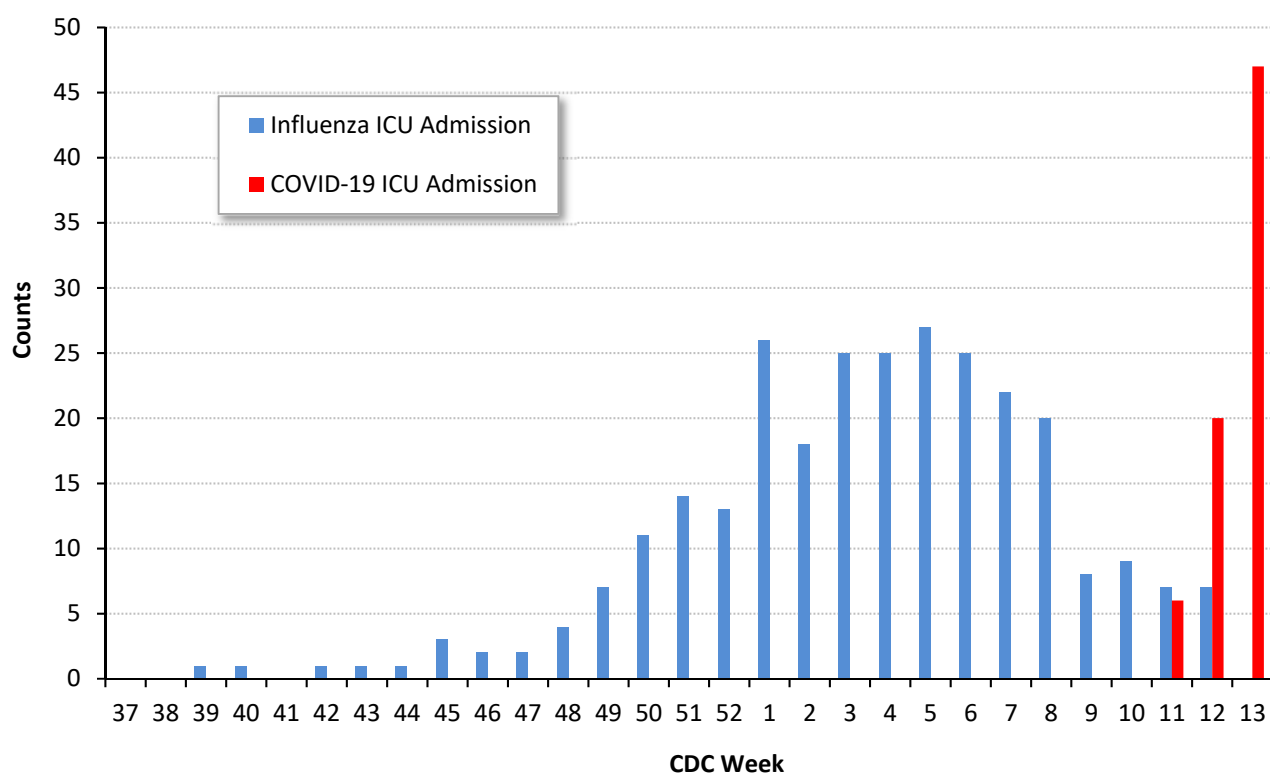
*All data are preliminary and subject to change as additional information is received. Data for week ending 4/4/20 is incomplete.

¹ Reflects all influenza-associated hospitalizations reported from 14 hospitals located within Dallas County by week of any positive influenza tests.

² Confirmed influenza-associated deaths as defined by a positive laboratory test and any of the following: (1) death certificate denotation, (2) medical record documentation of compatible symptoms and clear progression from illness to death, or (3) determination by the County Medical Examiner's office (ME) of no alternate cause of death. Does not include possible influenza-associated deaths with pending determination of primary cause of death.

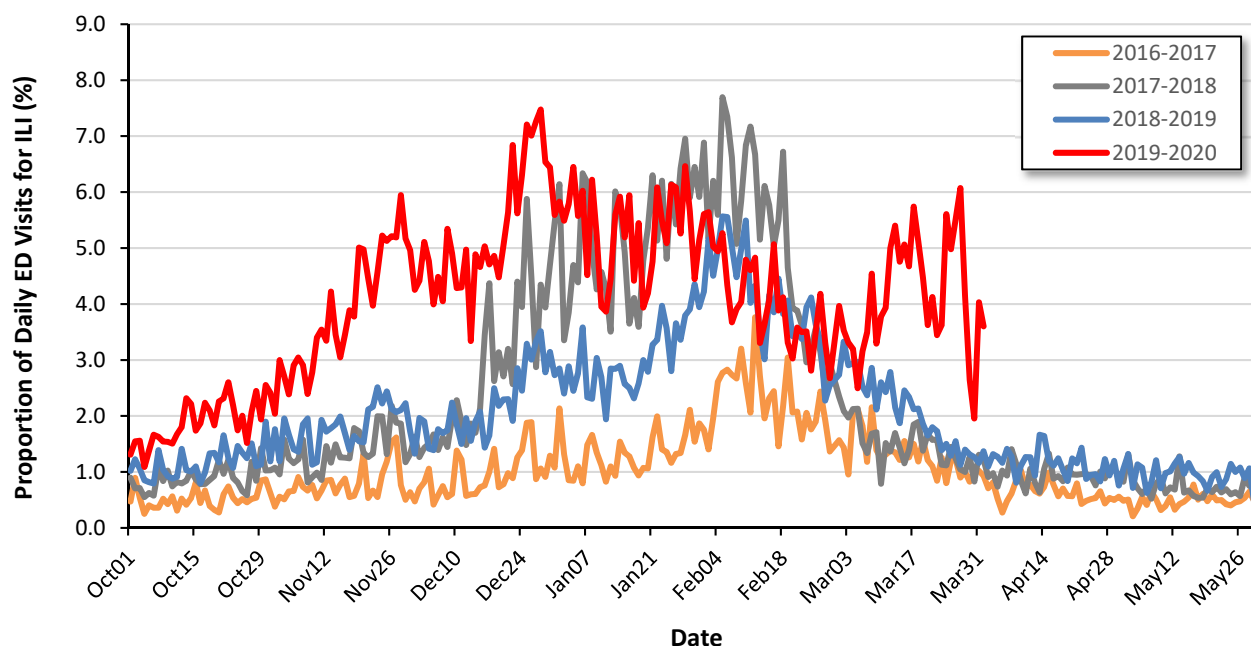
³ Reflect all COVID-19-associated hospitalizations reported from area hospitals within Dallas County by week of admission; data as of 7:00 pm 4/2/20.

Figure 4. Intensive Care Unit Hospitalizations for Influenza and COVID-19 by Week of Admission, Dallas County: September 2019 through week ending March 28, 2020 (CDC Week 13)*



*The data in this summary reflect cumulative data received as of 7:00 pm, April 2, 2020. All data are preliminary and subject to change as cases represented are being actively investigated, and may be updated between press releases. Includes only cases in Dallas County residents.

Figure 5. Syndromic Surveillance of Emergency Department Visits for Influenza-like Illness* (ILI), Dallas County: Proportion of Daily ED Visits for ILI Comparing Four Influenza Seasons: 2016 – April 1, 2020



* ILI is defined as presence of fever and cough or sore throat or mention of influenza. Data is from 18 hospital emergency departments voluntarily reporting numbers of persons presenting with self-reported chief complaints of ILI. The recent increase in ILI visits is unusual for this time of year.

Table 7. Cumulative COVID-19 Cases by City of residence within Dallas County

City of Residence	Cases (N=921)	% of Total Cases
Addison	10	1.1%
Balch Springs	5	0.5%
Carrollton	16	1.7%
Cedar Hill	17	1.8%
Coppell	14	1.5%
Dallas	533	57.9%
DeSoto	35	3.8%
Duncanville	5	0.5%
Farmers Branch	15	1.6%
Garland	69	7.5%
Glenn Heights	4	0.4%
Grand Prairie	26	2.8%
Highland Park	14	1.5%
Irving	56	6.1%
Lancaster	13	1.4%
Mesquite	31	3.4%
Richardson	24	2.6%
Rowlett	13	1.4%
Sachse	2	0.2%
Seagoville	1	0.1%
Sunnyvale	2	0.2%
University Park	16	1.7%

CDC Priorities for COVID-19 Testing <i>(rev. date: 3/24/20)</i> (See CDC Guidance for Evaluating and Reporting Persons Under Investigation (PUI) at: https://www.cdc.gov/coronavirus/2019-nCoV/hcp/clinical-criteria.html)	
PRIORITY 1: Ensure optimal care options for all hospitalized patients, lessen the risk of nosocomial infections, and maintain the integrity of the healthcare system	<ul style="list-style-type: none"> Hospitalized patients Symptomatic healthcare workers
PRIORITY 2: Ensure those who are at highest risk of complication of infection are rapidly identified and appropriately triaged	<ul style="list-style-type: none"> Patients in long-term care facilities with symptoms Patients 65 years of age and older with symptoms Patients with underlying conditions with symptoms First responders with symptoms
PRIORITY 3: As resources allow, test individuals in the surrounding community of rapidly increasing hospital cases to decrease community spread, and ensure health of essential workers	<ul style="list-style-type: none"> Critical infrastructure workers with symptoms Individuals who do not meet any of the above categories with symptoms Healthcare workers and first responders Individuals with mild symptoms in communities experiencing high COVID-19 hospitalizations
NON-PRIORITY	<ul style="list-style-type: none"> Individuals without symptoms

Exhibit BB



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Aging in Prison



"The number of prisoners age 55 or older sentenced to more than 1 year in state prison increased 400% between 1993 and 2013, from 26,300 (3% of the total state prison population) in 1993 to 131,500 (10% of the total population) in 2013"¹

Older adults in prison often exhibit physical and mental health problems, including dementia, and histories of trauma and chronic stress. Over 3,000 of these men and women will die each year in prison.²

Listed below are resources related to the needs, policies, programs, and legal issues of aging in prison.

1: (Carson & Sabol, 2016) [From Aging Of The State Prison Population, 1993-2013 (<https://www.bjs.gov/index.cfm?ty=pbdetail&iid=5602>)]

2: (James & Glaze, 2006; Maruschak, 2006; Maschi, Kwak, Ko, & Morrissey, 2012). [From Aging Prisoners: A Crisis in Need of Intervention, Fordham University, 2012.]

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-  The High Costs of Low Risk: The Crisis of America's Aging Prison Population (<http://www.osborneny.org/resources/the-high-costs-of-low-risk/>)
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-  The Health of America's Aging Prison Population (<https://academic.oup.com/epirev/article/40/1/157/4951841>)
-  Exploring the Relationship Between Cumulative Trauma and Recidivism Among Older Adults: Does Race and Offense History Matter (https://www.academia.edu/38043271/Exploring_the_Relationship_Between_Cumulative_Trauma_and_Recidivism_Among_Older_Adults_Does_Race_and_Offense_H_email_work_card=title)
-  Everywhere and Nowhere: Compassionate Release in the States (<https://famm.org/wp-content/uploads/Exec-Summary-Report.pdf>)
-  Ageing in imprisonment - Summary report (<https://www.icrc.org/en/publication/ageing-imprisonment-summary-report>)

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NIC RESOURCES

Effectively Managing Aging and Geriatric Offenders [Satellite/Internet Broadcast held March 11, 2010] (/effectively-managing-aging-and-geriatric-offenders-satelliteinternet-broadcast-held-march-11-2010)

Losing Time: Dementia and Alzheimer's Disease Behind Bars

An NIC Live Webinar

Losing Time: Dementia and Alzheimer's Disease Behind Bars [Webinar] (/losing-time-dementia-and-alzheimers-disease-behind-bars-webinar)

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[Resources for Correctional Trainers \(/resources-for-correctional-trainers\)](#)

[Partnership Training Programs \(/partnership-training-programs\)](#)

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[Projects \(/popular-projects\)](#)

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Exhibit C



Recommendations and Reports

July 7, 2006 / 55(RR09);1-44

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Prevention and Control of Tuberculosis in Correctional and Detention Facilities: Recommendations from CDC

Endorsed by the Advisory Council for the Elimination of Tuberculosis, the National Commission on Correctional Health Care, and the American Correctional Association

The material in this report originated in the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (proposed), Kevin Fenton, MD, PhD, Director, and the Division of Tuberculosis Elimination, Kenneth G. Castro, MD, Director.

Corresponding address: Division of Tuberculosis Elimination, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (proposed), CDC, 1600 Clifton Road, NE, MS E-10, Atlanta, GA 30333. Telephone: 404-639-8120; Fax: 404-639-8604.

Summary

Tuberculosis (TB) control can be particularly problematic in correctional and detention facilities, in which persons from diverse backgrounds and communities are housed in close proximity for varying periods. This report provides a framework and general guidelines for effective prevention and control of TB in jails, prisons, and other correctional and detention facilities. Recommendations were developed on the basis of published guidelines and a review of the scientific literature. Effective TB-prevention and -control measures in correctional facilities include early identification of persons with TB disease through entry and periodic follow-up screening; successful treatment of TB disease and latent TB infection; appropriate use of airborne precautions (e.g., airborne infection isolation, environmental controls, and respiratory protection); comprehensive discharge planning; and thorough and efficient contact investigation. These measures should be instituted in close collaboration with local or state health department TB-control programs and other key partners. Continuing education of inmates, detainees, and correctional facility staff is necessary to maximize cooperation and participation. To ensure TB-prevention and -control measures are effective, periodic program evaluation should be conducted.

Introduction

Tuberculosis (TB) is a disease caused by *Mycobacterium tuberculosis* that adversely affects public health around the world (1). In the United States, TB control remains a substantial public health challenge in multiple settings. TB can be particularly problematic in correctional and detention facilities (2), in which persons from diverse backgrounds and communities are housed in close proximity for varying periods. Effective TB prevention and control measures in correctional facilities are needed to reduce TB rates among inmates and the general U.S. population.

The recommendations provided in this report for the control of TB in correctional facilities expand on, update, and supersede recommendations issued by the Advisory Council for the Elimination of TB (ACET) in 1996 (3). This report provides a framework and general guidelines for effective prevention and control of TB in jails, prisons, and other correctional and detention facilities. In addition, on the basis of existing scientific knowledge and applied experience of correctional and public health officials, this report defines the essential activities necessary for preventing transmission of *M. tuberculosis* in correctional facilities. These fundamental activities can be categorized as 1) screening (finding persons with TB disease and latent TB infection [LTBI]); 2) containment (preventing transmission of TB and treating patients with TB disease and LTBI); 3) assessment (monitoring and evaluating screening and containment efforts); and 4) collaboration between correctional facilities and public health departments in TB control. These overarching activities are best achieved when correctional facility and public health department staff are provided with clear roles of shared responsibility.

The recommendations in this report can assist officials of federal, state, and local correctional facilities in preventing transmission of TB and controlling TB among inmates and facility employees. The target audience for this report includes public health department personnel, correctional medical directors and administrators, private correctional health vendors, staff in federal and state agencies, staff in professional organizations, and health-care professionals. The report is intended to assist policymakers in reaching informed decisions regarding the prevention and control of TB in correctional facilities.

Methods

To update the existing guidelines, with assistance from ACET, CDC organized and convened the Tuberculosis in Corrections Working Group, an ad hoc group of persons with expertise in public health and health care in correctional facilities. Organizations represented in the Working Group included ACET, the National Commission on Correctional Health Care, the American Correctional Association, the American Jail Association, and the Society of Correctional Physicians. The Working Group reviewed published guidelines and recommendations, published and unpublished policies and protocols, and peer-reviewed studies discussing overall TB prevention and control and aspects of TB prevention and control specific to correctional and detention facilities. These guidelines, recommendations, policies, protocols, and studies form the basis for the Working Group's recommendations. Because controlled trials are lacking for TB prevention and control activities and interventions specific to correctional and detention facilities, the recommendations have not been rated on the quality and quantity of the evidence. The recommendations reflect the expert opinion of the Working Group members with regard to best practices, based on their experience and their review of the literature.

Summary of Changes from Previous Recommendations

These guidelines are intended for short- and long-term confinement facilities (e.g., prisons, jails, and juvenile detention centers), which are typically referred to as correctional facilities throughout this report. These recommendations differ as follows from those made in 1996:

- The target audience has been broadened to include persons working in jails and other detention facilities.
- The need for correctional and detention facilities to base screening procedures for inmates and detainees on assessment of their risk for TB is emphasized. A description of how TB risk should be assessed is

included:

- The need for institutions to conduct a review of symptoms of TB for all inmates and detainees at entry is discussed.
- The need for all inmates and detainees with suspected TB to be placed in airborne infection isolation (AII) immediately is emphasized.
- Testing recommendations have been updated to reflect the development of the QuantiFERON®-TB Gold test (QFT-G), a new version of the QuantiFERON®-TB (QFT) diagnostic test for *M. tuberculosis* infection.
- The section on environmental controls has been expanded to cover local exhaust ventilation, general ventilation, air cleaning, and implementation of an environmental control program. Ventilation recommendations for selected areas in new or renovated correctional facilities have been included.
- A section on respiratory protection has been added, including information on implementing respiratory protection programs.
- Treatment recommendations for TB and LTBI have been updated on the basis of the most recent treatment statements published by CDC, the American Thoracic Society (ATS), and the Infectious Diseases Society of America.
- Emphasis is placed on case management of inmates with TB disease and LTBI.
- The need for early discharge planning coordinated with local public health staff is emphasized.
- A section has been included on U.S. Immigration and Customs Enforcement detainees.
- The importance of collaboration between correctional facility and public health staff is emphasized, particularly with respect to discharge planning and contact investigation.
- The need for corrections staff to work closely with public health staff to tailor an appropriately comprehensive training program to achieve and sustain TB control in a correctional facility is emphasized.
- The need for public health workers to receive education regarding the correctional environment is emphasized.
- Program evaluation is emphasized. Recommended areas of evaluation include assessment of TB risk in the facility, performance measurement for quality improvement, collaboration, information infrastructure, and using evaluation information to improve the TB-control program.

Background

During 1980--2003, the number of incarcerated persons in the United States increased fourfold, from approximately 500,000 in 1980 to approximately 2 million in 2003 (4,5). A disproportionately high percentage of TB cases occur among persons incarcerated in U.S. correctional facilities. In 2003 at midyear, although 0.7% of the total US population was confined in prisons and jails, 3.2% of all TB cases nationwide occurred among residents of correctional facilities (6). Although overall incidence of new TB cases among the U.S. population has remained at <10 cases per 100,000 persons since 1993 (6), substantially higher case rates have been reported in correctional populations (2). For example, the incidence of TB among inmates in New Jersey during 1994 was 91.2 cases per 100,000 inmates, compared with 11.0 cases per 100,000 persons among all New Jersey residents (3). In 1991, a TB case rate for inmates of a California prison was 184 cases per 100,000 persons, which was 10 times greater than the statewide rate (7). In addition, in 1993, the TB rate for inmates in the New York State correctional system was 139.3 cases per 100,000 persons, an increase from the rate of 15.4 during 1976--1978 (3,8). In California, the TB case rate reported from an urban jail in a high-prevalence area was 72.1 cases per 100,000 inmates in 1998, representing 10% of the county's cases in that year (9). Studies have demonstrated the prevalence of LTBI among inmates to be as high as 25% (10--14). Other studies have demonstrated a correlation between length of incarceration and positive tuberculin skin test (TST) response, indicating that transmission might have occurred in these facilities (15,16).

At least three factors contribute to the high rate of TB in correctional and detention facilities. First, disparate numbers of incarcerated persons are at high risk for TB (e.g., users of illicit substances [e.g., injection drugs], persons of low socioeconomic status, and persons with human immunodeficiency virus [HIV] infection). These persons often have not received standard public health interventions or nonemergency medical care before incarceration. Second, the physical structure of the facilities contributes to disease transmission, as facilities

often provide close living quarters, might have inadequate ventilation, and can be overcrowded (9,17--19). Third, movement of inmates into and out of overcrowded and inadequately ventilated facilities, coupled with existing TB-related risk factors of the inmates, combine to make correctional and detention facilities a high-risk environment for the transmission of *M. tuberculosis* and make implementation of TB-control measures particularly difficult (19). Despite recent efforts to improve TB-control measures in correctional and detention facilities, outbreaks of TB continue to occur in these settings, and TB disease has been transmitted to persons living in nearby communities (20--22). Consequently, correctional and detention facilities are critical settings in which to provide interventions for detecting and treating TB among a vulnerable population.

Addressing the Challenges of TB Control in Correctional Facilities

Published recommendations for elimination of TB in the United States include testing and treating inmates in correctional facilities for LTBI to prevent the development and transmission of TB (23). The basis for this recommendation is that LTBI and coinfection with HIV are more common in these underserved populations than in the general population (24--26). However, treating correctional inmates for LTBI can be challenging.

Before being incarcerated, inmates might have faced barriers to accessing community health services necessary for the detection and treatment of TB disease and LTBI (27). In addition, inmates released from correctional facilities often do not attend clinic visits or adhere to treatment regimens. One study of inmates released before completion of TB therapy indicated that only 43% made at least one visit to the clinic after release (28). In another jail setting, using an educational intervention increased the rate of clinic visits after release from 3% to only 23% (29).

In the United States, TB is concentrated increasingly among the most disadvantaged populations, particularly immigrants (30). Detained immigrants are arriving largely from countries with a high prevalence of TB (e.g., Mexico, the Philippines, and Vietnam) and therefore present unique challenges in the elimination of TB in the United States* (31). Social and legal barriers often make standard testing and treatment interventions inadequate among undocumented immigrants (31). In certain instances, these patients have become resistant to first-line anti-TB drugs because of the interrupted treatment received in their countries of origin (32). However, undocumented immigrants placed in detention and correctional facilities have an opportunity to receive TB screening and begin treatment for TB disease (33).

Rationale for Updating and Strengthening TB Control and Prevention Guidelines

Transmission of *M. tuberculosis* continues to be documented within correctional facilities, primarily as a result of undiagnosed TB. Inmates with undiagnosed TB disease place other inmates and correctional staff at risk for TB, and when released, these persons also can infect persons living in surrounding communities (16,17,20,21,22,34,35).

Despite the continued transmission of TB in correctional settings, few comprehensive evaluations of the implementation of TB-detection and -control procedures in correctional facilities have been performed (36--38). Nevertheless, correctional facilities are increasingly basing their TB prevention and control procedures on studies and data that support judicious interventions, including screening, case finding, case management, outbreak and contact investigations, and treatment for LTBI (7,9,14,21,28,33,34,39--46). Improving TB prevention and control practices within these settings is necessary to reduce rates of disease and eventually eliminate TB. TB prevention and control practices within correctional facilities should be strengthened for multiple reasons:

- *M. tuberculosis* is spread through the air. One highly infectious person can infect inmates, correctional staff, and visitors who share the same air space.
- Immediate isolation of infectious patients can interrupt transmission of *M. tuberculosis* in the facility.
- Prompt initiation of an adequate regimen of directly observed therapy (DOT)[†] helps ensure adherence to treatment because a health-care professional, a specially trained correctional officer, or a health department employee observes the patient swallowing each dose of medication. This method of treatment

can diminish infectiousness, reduce the risk for relapse, and help prevent the development of drug-resistant strains of *M. tuberculosis*.

- Inmates of correctional facilities have been reported to have relatively high rates of HIV infection; persons who are coinfectd with HIV and *M. tuberculosis* are at high risk for progressing from LTBI to TB disease.
- A completed regimen of treatment for LTBI can prevent the development of TB disease in persons who are infected with *M. tuberculosis*.
- Correctional facility officials have an opportunity to treat inmates who have TB disease or LTBI before such inmates are released into the community.
- Because a substantial proportion of inmates do not have any other access to the health-care system, the correctional setting can be a primary source of health information, intervention, and maintenance.

Screening

Early identification and successful treatment of persons with TB disease remains the most effective means of preventing disease transmission (47). Therefore, inmates who are likely to have infectious TB should be identified and begin treatment before they are integrated into the general correctional facility population (i.e., at the time of admission into the correctional system). When possible, newly arrived inmates should not be housed with other inmates until they have been appropriately screened for TB disease. Screening programs in the correctional setting also allow for the detection of substantial numbers of persons with LTBI who are at high risk for progressing to TB disease and would likely benefit from a course of treatment. This secondary benefit of screening programs is often limited by inability to initiate and ensure completion of LTBI treatment, particularly in short-term correctional facilities. In addition to screening at intake, routine (i.e., at least annual) screening of long-term inmates and correctional facility staff (e.g., custody and medical) should be incorporated into the TB-control program (48,49).

How screening activities should be implemented depends on multiple factors, including 1) the type of facility, 2) the prevalence of TB infection and disease in the facility, 3) the prevalence of TB in the inmates' communities, 4) the prevalence of other risk factors for TB (e.g., HIV) in the inmate population, and 5) the average length of stay of inmates in the facility. The type of screening recommended for a particular facility is determined by an assessment of the risk for TB transmission within that facility. The risk assessment should be performed at least annually and should be made in collaboration with the local or state health department. A facility's TB risk can be defined as being minimal or nonminimal. A facility has minimal TB risk if

- no cases of infectious TB have occurred in the facility in the last year,
- the facility does not house substantial numbers of inmates with risk factors for TB (e.g., HIV infection and injection-drug use),
- the facility does not house substantial numbers of new immigrants (i.e., persons arriving in the United States within the previous 5 years) from areas of the world with high rates of TB, and
- employees of the facility are not otherwise at risk for TB.

Any facility that does not meet these criteria should be categorized as a nonminimal TB risk facility.

Screening Methods

Symptom Screening

Whenever possible, health-care professionals should perform the initial screening. However, correctional officers in jails (particularly those housing minimal numbers of inmates) frequently administer health intake questionnaires. If custody staff members conduct the intake screening, they should receive adequate periodic training in taking a medical history, making necessary observations, and determining the appropriate disposition of inmates with signs or symptoms of possible medical problems. Staff conducting medical intake should receive appropriate counseling and education regarding medical confidentiality.

During their initial medical screening, inmates should be asked if they have a history of TB disease or if they have been treated for LTBI or TB disease previously. Documentation of any such history should be obtained from medical records, if possible. Inmates should be observed for the presence of a cough or evidence of significant weight loss. All incoming inmates in any size jail, prison, or other detention facility (e.g., immigration enforcement) should be immediately screened for symptoms of pulmonary TB by being asked if they have had a prolonged cough (i.e., one lasting ≥ 3 weeks), hemoptysis (i.e., bloody sputum), or chest pain.

The index of suspicion should be high when pulmonary symptoms are accompanied by general, systemic symptoms of TB (e.g., fever, chills, night sweats, easy fatigability, loss of appetite, and weight loss). Inmates should be interviewed systematically (i.e., using a standardized questionnaire) to determine whether they have experienced symptoms in recent weeks. Inmates who have symptoms suggestive of TB disease should immediately receive a thorough medical evaluation, including a TST or QFT-G, a chest radiograph, and, if indicated, sputum examinations.

Persons with symptoms suggestive of TB disease or with a history of inadequate treatment for TB disease should be immediately placed in an AII room[§] until they have undergone a thorough medical evaluation. If deemed infectious, such persons should remain in isolation until treatment has rendered them noninfectious.

Facilities without an on-site AII room should have a written plan for referring patients with suspected or confirmed TB to a facility that is equipped to isolate, evaluate, and treat TB patients.

Symptom screening alone is an unsatisfactory screening mechanism for TB, except in facilities with a minimal risk for TB transmission. The use of symptom screening alone often will fail to detect pulmonary TB in inmates.

Chest-Radiograph Screening

Screening with chest radiographs can be an effective means of detecting new cases of unsuspected TB disease at intake to a correctional facility. In addition, radiographic screening requires fewer subsequent visits than a TST (i.e., only those inmates with suspicious radiographs or TB symptoms require follow-up). However, such screening will not identify inmates with LTBI. One study demonstrated that screening inmates with a chest radiograph doubled the TB case-finding rate and reduced the time from intake into the correctional facility to isolation substantially compared with TST testing (2.3 days and 7.5 days, respectively), thereby reducing the risk for TB exposure for other inmates and staff (50). Digital radiographs (miniature or full-size) provide enhanced imaging and improved storage and readability. A miniature radiograph can be performed in <1 minute and exposes the patient to approximately one tenth the radiation dose of a conventional radiograph. One cost-effectiveness analysis of miniature chest radiography for TB screening on admission to jail indicated that more cases were detected with this method than either TST or symptom screening, and the cost of radiograph screening was less per case detected (51). The extent to which radiologic screening is used in a given institution should be dictated by multiple factors, including 1) local epidemiologic characteristics of TB disease; 2) inmate length of stay; 3) the ability of the health-care professionals within the facility to conduct careful histories, tuberculin skin or QFT-G testing, and cross-matches with state TB registries; and 4) timeliness of the radiographic study and its reading. Screening with chest radiographs might be appropriate in certain jails and detention facilities that house substantial numbers of inmates for short periods and serve populations at high risk for TB (e.g., those with high prevalence of HIV infection or history of injection-drug use and foreign-born persons from countries in which TB prevalence is high).

Inmates who are infected with HIV might be anergic and consequently might have false-negative TST results.

However, routine anergy panel testing is not recommended because it has not been demonstrated to assist in diagnosing or excluding LTBI (52). In facilities that do not perform routine radiographic screening for all inmates, a chest radiograph should be part of the initial screening of HIV-infected patients and those who are at risk for HIV infection but whose status is unknown.

In facilities with on-site radiographic screening, the chest radiograph should be performed as part of intake screening and read promptly by a physician, preferably within 24 hours. Persons who have radiographs suggestive of TB should be isolated immediately and evaluated further. Sputum-smear and culture examinations

should be performed for inmates whose chest radiographs are consistent with TB disease and might be indicated for at least certain persons who are symptomatic, regardless of their TST, QFT-G, or chest radiograph results because persons with HIV and TB disease might have "negative" chest radiographs in addition to false-negative TST or QFT-G results.

Mantoux TST Screening

Tuberculin skin testing using 0.1 mL of 5 tuberculin units (TU) of purified protein derivative (PPD) is the most common method of testing for TB infection. Multiple-puncture tests (e.g., the tine test) should not be used to determine whether a person is infected. Persons who have a documented history of a positive TST result (with a millimeter [mm] reading), a documented history of TB disease, or a reported history of a severe necrotic reaction to tuberculin should be exempt from a routine TST. For persons with a history of severe necrotic reactions and without a documented positive result with a millimeter reading, a QFT-G may be substituted for the TST. Otherwise, such persons should be screened for symptoms of TB and receive a chest radiograph unless they have had one recently (i.e., within 6 months) and are not symptomatic. Pregnancy, lactation, or previous vaccination with Bacillus Calmette-Guerin (BCG) vaccine are not contraindications for tuberculin skin testing. The TST is not completely sensitive for TB disease; its sensitivity ranges from 75%--90% (53,54). Despite this limitation, skin testing, along with use of a symptom review, frequently constitutes the most practical approach to screening for TB disease.

A trained health-care professional should place the TST and interpret the reaction 48--72 hours after the injection by measuring the area of induration (i.e., the palpable swelling) at the injection site. The diameter of the indurated area should be measured across the width of the forearm. Erythema (i.e., the redness of the skin) should not be measured. All reactions, even those classified as negative, should be recorded in millimeters of induration.

In the majority of cases, a TST reaction of ≥ 10 mm induration is considered a positive result in inmates and correctional facility employees. However, an induration of ≥ 5 mm is considered a positive result in the following persons:

- persons infected with HIV,
- persons who are recent contacts of patients with TB disease,
- persons with fibrotic changes on chest radiograph consistent with previous TB disease,
- organ transplant recipients and patients with other immunocompromising conditions (e.g., persons receiving ≥ 15 mg/day of prednisone for ≥ 1 month), and
- persons suspected of having TB disease.

Persons who have a positive TST result and no symptoms suggestive of TB disease should be evaluated with a chest radiograph within 72 hours after the skin test is interpreted. Persons who have symptoms suggestive of TB disease should be evaluated immediately and placed in an AII room until TB is ruled out (see Symptom Screening).

The use of two-step testing can reduce the number of positive TSTs that would otherwise be misclassified as recent skin-test conversions during future periodic screenings. Certain persons who were infected with *M. tuberculosis* years earlier exhibit waning delayed-type hypersensitivity to tuberculin. When they are skin tested years after infection, they might have a false-negative TST result (even though they are truly infected).

However, this first skin test years after the infection might stimulate the ability to react to subsequent tests, resulting in a "booster" reaction. When the test is repeated, the reaction might be misinterpreted as a new infection (recent conversion) rather than a boosted reaction. For two-step testing, persons whose baseline TSTs yield a negative result are retested 1--3 weeks after the initial test. If the second test result is negative, they are considered not infected. If the second test result is positive, they are classified as having had previous TB infection. Two-step testing should be considered for the baseline testing of persons who report no history of a recent TST and who will receive repeated TSTs as part of an institutional periodic skin-testing program. In the majority of cases, a two-step TST is not practical in jails because of the short average length of stay of inmates.

In the past, a panel of other common antigens was often applied with the TST to obtain information regarding the competence of the patient's cellular immune system and to identify anergy. More recently, however, anergy testing has been demonstrated to be of limited usefulness because of problems with standardization and reproducibility, the low risk for TB associated with a diagnosis of anergy, and the lack of apparent benefit of preventive therapy for groups of anergic HIV-infected persons. Therefore, the use of anergy testing in conjunction with a TST is no longer recommended routinely for screening programs for *M. tuberculosis* infection in the United States (52).

Intracutaneous inoculation with BCG is currently used worldwide as a vaccine against TB. BCG is a live attenuated *Mycobacterium bovis* strain that stimulates the immune system to protect against TB. No reliable method has been developed to distinguish TST reactions caused by vaccination with BCG from those caused by natural mycobacterial infections, although reactions of ≥ 20 mm of induration are not likely caused by BCG (55). TST is not contraindicated for persons who have been vaccinated with BCG, and the TST results of such persons are used to support or exclude the diagnosis of *M. tuberculosis* infection. A diagnosis of *M. tuberculosis* infection and treatment for LTBI should be considered for any BCG-vaccinated person who has a positive TST reaction. The same criteria for interpretation of TST results are used for both BCG-vaccinated and nonvaccinated persons (56).

QuantiFERON®-TB Gold Test

In May 2005, the U.S. Food and Drug Administration (FDA) licensed QFT-G. This in-vitro diagnostic test measures the amount of interferon-gamma produced by cells in whole blood that have been stimulated by mycobacterial peptides. The peptides used in the test mimic proteins known as ESAT-6 and CFP-10, which are present in *M. tuberculosis* but absent from all BCG strains and from the majority of commonly encountered non-TB mycobacteria. The test is intended for use as a diagnostic tool for *M. tuberculosis* infection, including both TB disease and LTBI. As with a TST, QFT-G cannot distinguish between LTBI and TB disease and should be used in conjunction with risk assessment, radiography, and other diagnostic evaluations. The advantages of QFT-G compared with TST are that 1) results can be obtained after a single patient visit, 2) the variability associated with skin-test reading can be reduced because "reading" is performed in a qualified laboratory, and 3) QFT-G is not affected by previous BCG vaccination and eliminates the unnecessary treatment of persons with false-positive results. QFT-G does not affect the result of future QFT-G tests (i.e., no "boosting" occurs). Limitations of the test include the need for phlebotomy, the need to process blood specimens within 12 hours of collection for the most recent version of the test, the limited number of laboratories that process the test, and a lack of clinical experience in interpreting test results. The elimination of the second visit for reading the TST, however, is likely to render the QFT-G competitive in cost-benefit considerations.

Although the performance of QFT-G has not been evaluated sufficiently in select populations of interest (e.g., HIV-infected persons), available data indicate that QFT-G is as sensitive as TST for detection of TB disease and more specific than TST for detection of LTBI (57,58). CDC guidelines for QFT-G recommend that QFT-G can be used in place of TST in all circumstances in which TST is currently used (58). This includes initial and periodic TB screening for correctional facility inmates and employees and testing of exposed persons in contact investigations. Because data are insufficient regarding performance of QFT-G in certain clinical situations, as with a negative TST result, a negative QFT-G result alone might not be sufficient to exclude *M. tuberculosis* infection in these situations. Examples of such clinical scenarios include those involving patients with severe immunosuppression who have had recent exposure to a patient with TB and patients being treated or about to undergo treatment with potent tumor necrosis factor alpha (TNF- α) antagonists.

Use of Local Health Department TB Registry

Correctional facilities and local health departments should collaborate to ensure effective TB screening in the correctional setting. Inmates might provide inaccurate information on admission for multiple reasons, ranging from forgetfulness and confusion to deliberate misrepresentation. Health departments should perform cross-matches with the local TB registry and search for matches on known aliases, birth dates, maiden names, and other personal information for inmates suspected of having TB infection. A readily accessible record of

previous TB history, drug-susceptibility patterns, treatment, and compliance can be useful in determining the disposition of a given patient with suspected TB.

Initial Screening

The following procedures should be used for the initial screening of inmates and detainees (depending on their length of stay in the facility and the type of facility) and for all correctional facility employees, regardless of the type of facility.

Inmates in Minimal TB Risk Facilities

Inmates in all minimal TB risk correctional and detention facilities should be evaluated on entry for symptoms of TB. Persons with symptoms of TB should be evaluated immediately to rule out the presence of infectious disease and kept in an AII room until they are evaluated. If the facility does not have an AII room, the inmate should be transported to a facility that has one. In addition, all newly arrived inmates should be evaluated for clinical conditions and other factors that increase the risk for infection or the risk for progressing to TB disease, including the following:

- HIV infection,
- recent immigration,
- history of TB,
- recent close contact with a person with TB disease,
- injection-drug use,
- diabetes mellitus,
- immunosuppressive therapy,
- hematologic malignancy or lymphoma,
- chronic renal failure,
- medical conditions associated with substantial weight loss or malnutrition, or
- history of gastrectomy or jejunioileal bypass.

Persons with any of these conditions require further screening with a TST, a QFT-G, or a chest radiograph within 7 days of arrival. Regardless of the TST or QFT-G result, inmates known to have HIV infection or other severe immunosuppression, and those who are at risk for HIV infection but whose HIV status is unknown, should have a chest radiograph taken as part of the initial screening. Persons who have an abnormal chest radiograph should be further evaluated to rule out TB disease; if TB disease is excluded as a diagnosis, LTBI therapy should be considered if the TST or QFT-G result is positive.

Inmates in Nonminimal TB Risk Prisons

Immediately on arrival, all new inmates should be screened for symptoms, and any inmate with symptoms suggestive of TB should be placed in an AII room and evaluated promptly for TB disease. If the facility does not have an AII room, the inmate should be transported to a facility that has one. Inmates who have no symptoms require further screening with a TST, a QFT-G, or a chest radiograph within 7 days of arrival.

Regardless of their TST or QFT-G status, inmates known to have HIV infection or other severe immunosuppression, and those who are at risk for HIV infection but whose HIV status is unknown, should have a chest radiograph taken as part of the initial screening. Persons who have an abnormal chest radiograph should be further evaluated to rule out TB disease; if TB disease is excluded as a diagnosis, LTBI therapy should be considered if the TST or QFT-G result is positive.

As the rate of TB disease in the United States has decreased, identification and treatment of persons with LTBI who are at high risk for TB disease have become essential components of the TB elimination strategy promoted by ACET (59). Targeted testing using the TST or QFT-G identifies persons at high risk for TB disease who would benefit from treatment for LTBI. Prisons offer an excellent public health opportunity for identifying persons at high risk for TB who can be screened for TB infection and placed on LTBI therapy, if indicated. If

the TST is used, a two-step testing procedure should be strongly considered when obtaining a baseline reading. A single step QFT-G is an adequate baseline. Inmates with a positive test should be evaluated for LTBI therapy after TB disease is excluded.

Inmates in Nonminimal TB Risk Jails and Other Short-Term Detention Facilities

As in prisons, all new detainees in nonminimal TB risk jails should be screened on entry for symptoms, and any detainee who has symptoms suggestive of TB should be placed immediately in an AII room and evaluated promptly for TB disease. If the facility does not have an AII room, the inmate should be transported promptly to a facility that does have one. Detainees without symptoms require further screening with a TST, a QFT-G, or a chest radiograph within 7 days of arrival. Regardless of the TST or QFT-G result, detainees known to have HIV infection, and those who are at risk for HIV infection but whose HIV status is unknown, should have a chest radiograph taken as part of the initial screening. Persons who have a positive result should be further evaluated to rule out TB disease.

The primary purpose of screening in correctional settings is to detect TB disease. TST or QFT-G screening in jails to initiate LTBI therapy often is not practical because of the high rate of turnover and short lengths of stay. Although not all jail detainees have short lengths of stay, determining which detainees will be in the jail for a long term is difficult. Nationwide, approximately half of persons detained in local jails are released within 48 hours of admission. Thus, even if all detainees can be tested at intake, a large proportion will be unavailable to have their TSTs read or to be evaluated when QFT-G test results are available. Of those still in custody, a substantial percentage will be released before the radiographic and medical evaluation is completed. In a 1996 study, 43% of detainees at a county jail in Illinois who had a positive TST result were released or transferred before their evaluation could be completed (3).

A substantial proportion of detainees who are incarcerated long enough to begin LTBI therapy will be released before completion of treatment. A San Francisco study indicated that approximately 62% of detainees who were started on LTBI treatment were released before completion (40). These data illustrate the challenges of implementing a testing and treatment program for LTBI in jails with highly dynamic detainee populations. Certain jails have adopted a targeted approach of performing TSTs only on new detainees who are at high risk for TB disease (e.g., detainees with known HIV infection). Screening for TB and treating LTBI are most effective within the jail setting if resources dedicated to discharge planning and reliable access to community-based treatment are available. Modest interventions (e.g., education and incentives [see Glossary]) in the jail setting can lead to improvements in linking released detainees to postrelease medical care and increase the likelihood that therapy will be completed (60,61).

Persons in Holding or Booking Facilities

City, county, and other law enforcement authorities frequently have facilities that hold arrestees and detainees for short periods of time, ranging from hours to multiple days. TB symptom screening is recommended for all persons at the time of entry into these facilities. Any detainee who has symptoms suggestive of TB should be immediately isolated and transferred to a facility or hospital in which the detainee can be placed in an AII room and evaluated promptly for TB disease.

Employees in All Correctional and Detention Facilities

A medical history relating to TB should be obtained from and recorded for all new employees at the time of hiring, and a physical examination for TB disease should be required. The results of the screening and examination should be kept confidential; access should be granted to public health and infection control medical professionals only when necessary. In addition, a TST or QFT-G should be mandatory for all employees who do not have a documented history of a positive result. To improve the accuracy of the baseline result, a two-step TST or a single-step QFT-G should be used for the initial screening of employees who have not been tested during the preceding 12 months. Persons who have a positive TST or QFT-G result should have a chest radiograph taken and interpreted and should be required to have a thorough medical evaluation; if TB disease is excluded as a diagnosis, such persons should be considered for LTBI therapy. All employees should be

informed that they should seek appropriate follow-up and testing for TB if they are immunosuppressed for any reason (e.g., have HIV infection). Any employee who has symptoms suggestive of TB should not return to the workplace until a clinician has excluded a diagnosis of infectious TB disease.

Other Persons Who Might Need to be Screened

Certain persons who are neither inmates nor employees but who visit high-risk facilities on a regular basis also should be considered for screening. These persons might include contractors (e.g., food handlers and service workers), volunteers, and those providing religious ministries. Screening of these persons should follow the same procedures as those outlined for employees.

Periodic Screening

Long-term inmates and all employees who have a negative TST or QFT-G result should have follow-up testing at least annually. Persons who have a history of a positive test result should be screened for symptoms of TB disease. Annual chest radiographs are unnecessary for the follow-up evaluation of infected persons. Test results should be recorded in medical records and in a retrievable aggregate database of all TST or QFT-G results.

Personal identifying information should be kept confidential.

Correctional facilities can use multiple strategies to ensure annual screening of long-term inmates for newly acquired TB infection. Certain institutions schedule annual screening on the inmate's date of birth or on the anniversary of the inmate's most recent test. Other institutions and systems suspend inmate movement and screen the entire population on the same day every year. Methods of screening a subset of the inmate population (e.g., on a monthly basis) are beneficial because they provide an ongoing assessment of *M. tuberculosis* transmission within the facility.

Results from TST or QFT-G testing should be analyzed periodically to estimate the risk for acquiring new infection in a correctional facility; however, this analysis should be completed by using only the test results of facility employees and inmates who have remained in the facility continually during the interval between testing. The conversion rate equals the number of employees or inmates whose test results have converted from negative to positive (i.e., the numerator) during a specific interval divided by the total number of previously negative employees or inmates who were tested during the same interval (i.e., the denominator). In certain facilities, conducting an analysis of test results for specific areas or groups within the facility might be appropriate.

More frequent screening is needed when a conversion rate is substantially higher than previous rates or when other evidence of ongoing transmission is detected. A cluster (i.e., either two or more patients with TB disease that are linked by epidemiologic or genotyping data or two or more TST or QFT-G conversions occurring in the correctional facility among inmates who are epidemiologically linked) or other evidence of person-to-person transmission also warrants additional epidemiologic investigation and possibly a revision of the facility's TB prevention and control protocol.

Facilities in which the risk for infection with *M. tuberculosis* is minimal might not need to maintain a periodic screening program. However, requiring baseline TST or QFT-G testing of employees would enable medical staff to distinguish between a TST or QFT-G conversion and a positive TST or QFT-G result caused by a previous exposure to *M. tuberculosis*. A decision to discontinue periodic employee screening should be made in consultation with the local or state health department.

HIV Counseling, Testing, and Referral

HIV counseling, testing, and referral (CTR) should be routinely recommended for all persons in settings in which the population is at increased behavioral or clinical risk for acquiring or transmitting HIV infection, regardless of setting prevalence ([62](#)). Because correctional facilities are considered settings in which the population is at increased risk for acquiring or transmitting HIV, routine HIV CTR is recommended for inmates.

Furthermore, HIV infection is the greatest risk factor for progression from LTBI to TB disease (63,64).

Therefore, HIV CTR should be routinely offered to all inmates and correctional facility staff with LTBI or TB disease if their HIV infection status is unknown at the time of their LTBI or TB disease diagnosis (64,65).

Correctional facilities should be particularly aware of the need for preventing transmission of *M. tuberculosis* in settings in which persons infected with HIV might be housed or might work (66).

Use of Data to Refine Policies and Procedures

Correctional and detention facilities are strongly encouraged to collect and analyze data on the effectiveness of their TB screening policies and procedures. Working in conjunction with their state or local TB-control program, correctional and detention facilities should refine their screening policies and procedures as indicated by such data. In the absence of local data that justify revision, correctional and detention facilities should adhere to the screening recommendations detailed above.

Case Reporting

All states require designated health-care professionals to report suspected and confirmed cases of TB to their local or state health department; this reporting is mandatory for all correctional facilities, whether private, federal, state, or local. Correctional facility medical staff should report any suspected or confirmed TB cases among inmates or employees to the appropriate health agency in accordance with state and local laws and regulations, even if the inmate or detainee has already been released or transferred from the facility. Reporting cases to health departments benefits the correctional facility by allowing it to obtain health department resources for case management and contact investigation in both the facility and the community. For each suspected case of TB, the diagnosis or the exclusion of a diagnosis of TB should be entered immediately into 1) the person's medical record, 2) the retrievable aggregate TB-control database at the facility, and 3) the database at a centralized office if the system has multiple facilities. In addition, drug-susceptibility results should be sent to the state or local health department for use in monitoring the rates of drug resistance in the health department's jurisdiction. Drug-susceptibility reports also should be sent to all health departments managing the infectious person's contacts because the choice of medication for LTBI treatment is based on these drug-susceptibility test results (64). Reports to local or state health departments should identify the agency that has custodial responsibility for the inmate (e.g., county corrections agency, state corrections agency, ICE, Federal Bureau of Prisons [FBOP], and U.S. Marshals Service [USMS]) and the corresponding identification number for that agency (e.g., U.S. alien number, FBOP number, or USMS number). Federal law enforcement agencies frequently contract for bed space with local or private detention facilities. Therefore, custodial authority and corresponding custody identification numbers should be verified with the facility's custody staff; detention facility medical staff might not have this information available.

Isolation in an Airborne Infection Isolation Room

Initiation

TB airborne precautions should be initiated for any patient who has signs or symptoms of TB disease or who has documented TB disease and has not completed treatment or not been determined previously to be noninfectious.

Discontinuation

For patients placed in an AII room because of suspected infectious TB disease of the lungs, airways, or larynx, airborne precautions can be discontinued when infectious TB disease is considered unlikely and either 1) another diagnosis is made that explains the clinical syndrome or 2) the patient has three negative acid-fast bacilli (AFB) sputum-smear results (67,68). The three sputum specimens should be collected 8--24 hours apart (69), and at least one should be an early morning specimen (because respiratory secretions pool overnight).

Typically, this will allow patients with negative sputum-smear results to be released from an AII room in 2 days. Incarcerated patients for whom the suspicion of TB disease remains after the collection of three negative AFB sputum-smear results should not be released from airborne precautions until they are on standard multidrug anti-TB treatment and are clinically improving. Because patients with TB disease who have negative AFB sputum-smear results can still be infectious (70), patients with suspected disease who meet the above criteria for release from airborne precautions should not be released to an area in which other patients with immunocompromising conditions are housed.

A patient who has drug-susceptible TB of the lung, airways, or larynx, is on standard multidrug anti-TB treatment, and has had a significant clinical and bacteriologic response to therapy (i.e., reduction in cough, resolution of fever, and progressively decreasing quantity of AFB on smear result) is probably no longer infectious. However, because culture and drug-susceptibility results are not typically known when the decision to discontinue airborne precautions is made, all patients with confirmed TB disease should remain in an AII room while incarcerated until they

- have had three consecutive negative AFB sputum-smear results collected 8--24 hours apart, with at least one being an early morning specimen,
- have received standard multidrug anti-TB treatment, and
- have demonstrated clinical improvement.

Because the consequences of transmission of MDR TB (i.e., TB that is resistant to isoniazid and rifampin) are severe, infection-control practitioners might choose to keep persons with suspected or confirmed MDR TB disease in an AII room until negative sputum-culture results have been documented in addition to negative AFB sputum-smear results.

Environmental Controls

Overview

Guidelines for preventing transmission of *M. tuberculosis* in health-care settings and for environmental infection control in health-care facilities have been published previously (71,72). These guidelines and this report can be used to educate correctional facility staff regarding use of environmental controls in TB infection-control programs.

Environmental controls should be implemented when the risk for TB transmission persists despite efforts to screen and treat infected inmates. Environmental controls are used to remove or inactivate *M. tuberculosis* in areas in which the organism could be transmitted. Primary environmental controls consist of controlling the source of infection by using local exhaust ventilation (e.g., hoods, tents, or booths) and diluting and removing contaminated air by using general ventilation. These controls help prevent the spread and reduce the concentration of airborne infectious droplet nuclei (see Glossary). Environmental controls work in conjunction with administrative controls such as isolation of inmates with suspected TB disease detected through screening (see Glossary). Secondary environmental controls consist of controlling the airflow to prevent contamination of air in areas adjacent to the source (AII rooms) and cleaning the air (using a HEPA filter or ultraviolet germicidal irradiation [UVGI]) to increase the number of equivalent ACH.[¶] The efficiency of different primary or secondary environmental controls varies; details concerning the application of these controls to prevent transmission of *M. tuberculosis* in health-care settings have been published previously (71). To be effective, secondary environmental controls should be used and maintained properly, and their strengths and limitations should be recognized. The engineering design and operational efficacy parameters for UVGI as a secondary control measure (i.e., portable UVGI units, upper-room air UVGI, and in-duct UVGI) continue to evolve and require special attention in their design, selection, and maintenance.

Exposure to *M. tuberculosis* within correctional facilities can be reduced through the effective use of environmental controls at the source of exposure (e.g., an infectious inmate) or in general areas. Source-control techniques can prevent or reduce the spread of infectious droplet nuclei into the air in situations in which the

source has been identified and the generation of the contaminant is localized by collecting infectious particles as they are released. Use of these techniques is particularly prudent during procedures that are likely to generate infectious aerosols (e.g., bronchoscopy and sputum induction) and when inmates with infectious TB disease are coughing or sneezing.

Unsuspected and undiagnosed cases of infectious TB disease contribute substantially to disease transmission within correctional facilities (73). When attempting to control this type of transmission, source control is not a feasible option. Instead, general ventilation and air cleaning should be relied on for environmental control. General ventilation can be used to dilute the air and remove air contaminants and to control airflow patterns in AII rooms or other correctional facility settings. Air-cleaning technologies include mechanical air filtration to reduce the concentration of *M. tuberculosis* droplet nuclei and UVGI to kill or inactivate microorganisms so they no longer pose a risk for infection.

Ventilation systems for correctional facility settings should be designed, and modified when necessary, by ventilation engineers in collaboration with infection-control practitioners and occupational health staff. Recommendations for designing and operating ventilation systems in correctional facilities have been published (48,49,74--76). The multiple types of and conditions for use of ventilation systems in correctional-facility settings and the individual needs of these settings preclude provision of extensive guidance in this report.

Incremental improvements in environmental controls (e.g., increasing the removal efficiency of an existing filtration system in any area) are likely to lessen the potential for TB transmission from persons with unsuspected or undiagnosed TB. This information should not be used in place of consultation with experts who can advise on ventilation system and air handling design, selection, installation, and maintenance. Because environmental controls will fail if they are not properly operated and maintained, routine training and education of infection-control and maintenance staff are key components to a successful TB infection-control program.

Airborne Infection Isolation Rooms

Inmates known or suspected of having TB disease should be placed in an AII room or AII cell that meets the design and operational criteria for airborne infection isolation described previously (71). Inmates deemed infectious should remain in isolation until treatment or further evaluation has ensured that they are noninfectious. Facilities without an on-site AII room should have a written plan for referring patients with suspected or confirmed TB to a facility that is equipped to isolate, evaluate, and treat TB patients.

New or renovated facilities should ensure that a sufficient number of AII rooms are available consistent with the facility risk assessment. Under rare circumstances, if an AII room is not available and the immediate transfer of the inmate with suspected infectious TB is not possible, the inmate should be housed temporarily in a room that has been modified to prevent the escape of infectious aerosols outside the TB holding area. The heating, ventilating, and air-conditioning (HVAC) system in this temporary TB holding area might have to be manipulated or augmented with auxiliary exhaust fans to create an inward flow of air that reduces the potential escape of infectious aerosols. If possible, air from these areas should be exhausted directly to the outdoors. If this is not feasible, the highest filtration efficiency compatible with the installed HVAC system should be used. Because TB droplet nuclei are approximately 1--5 micrometers in size, filtration efficiency should be evaluated for particles in that size range. Filter selection based on the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 52.2 Minimum Efficiency Reporting Value (MERV)--rating efficiency tables can help in this evaluation (77). Secondary air cleaning techniques (portable air cleaners and UVGI) also can be used in these areas to increase effective air cleaning.

Local Exhaust Ventilation

Aerosol-producing procedures should be performed in an area with a type of local exhaust ventilation that captures and removes airborne contaminants at or near their source without exposing persons in the area to infectious agents. Local exhaust devices typically use hoods. Two types of hoods are used: enclosing devices, in which the hood either partially or fully encloses the infectious source, and exterior devices, in which the

infectious source is near but outside the hood. Fully enclosed hoods, booths, or tents are always preferable to exterior devices because of their superior ability to prevent contaminants from escaping.

Enclosing devices should have sufficient airflow to remove $\geq 99\%$ of airborne particles during the interval between the departure of one patient and the arrival of the next. The time required to remove a given percentage of airborne particles from an enclosed space depends on 1) the ACH number, 2) the location of the ventilation inlet and outlet, and 3) the physical configuration of the room or booth. The time interval required to ensure the proper level of airborne contaminant removal from enclosing devices varies according to ACH ([Table 1](#)). For example, if an enclosing device operates at six ACH, and the air inlet and exhaust locations allow for good air mixing, approximately 46 minutes would be required to remove 99% of the contaminated air after the aerosol-producing procedure has ended. Similarly, an additional 23 minutes (total time: 69 minutes) would be required to increase the removal efficiency to 99.9%. Doubling the ventilation rate decreases the waiting time by half.

General Ventilation

General ventilation is used to 1) dilute and remove contaminated air, 2) control the direction of airflow in a correctional facility setting, and 3) control airflow patterns in rooms. Recommended ventilation rates for correctional facility settings are typically expressed in ACH. Ventilation recommendations for selected areas in new or renovated correctional facility settings should be followed ([Table 2](#)). The feasibility of achieving a specific ventilation rate depends on the construction and operational requirements of the ventilation system and might differ for retrofitted and newly constructed facilities. The expense and effort of achieving a high ventilation rate might be reasonable for new construction but not be as feasible when retrofitting an existing setting.

Ventilation design guidance for correctional facilities and related areas has been published (78). This design guidance includes specific ventilation recommendations regarding total ventilation, filtration efficiency, and environmental design parameters. For minimum outdoor air supply recommendations, the guidance refers to ASHRAE Standard 62, Ventilation for Acceptable Indoor Air Quality. In 2004, ASHRAE revised and renumbered this standard to ANSI/ASHRAE Standard 62.1 (74). For areas within correctional facilities that are not intended to contain persons with infectious TB, the recommended minimum outdoor air supply rates should meet or exceed those recommended in ANSI/ASHRAE Standard 62.1-2004 (74). When risk analysis reveals an enhanced potential for undiagnosed cases of infectious TB, facility designers and owners may consider using higher supply rates of outdoor air (e.g., those recommended for areas within health-care facilities anticipated to contain infectious patients). Minimum outdoor air supply recommendations for health-care facilities have been published ([71, 79](#)). Because correctional areas frequently will not have an exact equivalent area within the health-care environment, the designer or owner should identify an analogous health-care area from which to choose the outdoor air supply recommendation. This selection should be made on the basis of occupant risk factors for TB, occupant activities, and occupant density within the area. For example, the intake, holding, and processing area of a higher risk correctional facility might be considered analogous to the emergency waiting room area in a health-care facility. In that case, the recommended outdoor air supply would be at least two ACH.

The direction of air movement relative to adjacent areas is necessary for the containment of contaminated air. Air within a correctional facility should flow to minimize exposure of others within the building ([Table 2](#)). For example, air inside an AII room or cell should flow from the corridor and air-supply grille across the worker, then across that patient, and finally out of the room. To ensure that air is flowing from the corridor into an AII room or cell, smoke testing should be performed daily, even if the AII room or cell is equipped with a pressure-sensing device. Air flow (supply air and exhaust air) should be measured at least annually and compared with the designed air flow rates to ensure that optimal directional air flow and air exchange rates are being maintained ([Table 2](#)).

Air Cleaning Methods

Detailed information has been published regarding the selection, design, maintenance, and safety considerations associated with air cleaning methods (i.e., filtration and UVGI) (71). Designers and end users should consult this information. Air removed from areas likely to contain infectious aerosols (e.g., AII cells, sputum collection and other procedure rooms, and intake areas) should be exhausted directly to the outdoors to ensure that it cannot immediately reenter the building or pose a hazard to persons outside, in accordance with applicable federal, state, and local regulations. If discharging air to the outside is not feasible, HEPA filters should be used to clean the air before returning to the general ventilation system. Such recirculation is acceptable only if the air is recirculated back into the same general area from which it originated.

For general population areas in which infectious aerosols are not anticipated but might be present (from persons with undiagnosed TB disease), total exhaust ventilation should be considered where and when the outdoor environmental conditions (temperature and humidity) are compatible with a single-pass system without undue energy or equipment costs. When recirculating air from these areas, the minimum ASHRAE-recommended level of filtration is a MERV-8 filter (78). However, CDC encourages selection and use of filters with higher MERV ratings to provide an incremental improvement in the protection afforded by this mechanism. The filtration system should be designed to prevent filter by-pass and to allow filter leakage testing and safe filter changes. A combination of air cleaning methods (e.g., MERV-rated filters and supplemental UVGI) may be used to increase effective air cleaning.

When used, UVGI should be applied in-duct (i.e., inside the ductwork of existing HVAC systems) or in the upper room of the area to be treated to ensure that organisms are inactivated. Upper-air systems should be designed, installed, and monitored to ensure both sufficient irradiation in the upper room to inactivate *M. tuberculosis* and safe levels of UVGI in the occupied space.

Environmental Control Maintenance

To be most effective, environmental controls should be installed, operated, and maintained correctly. Ongoing maintenance should be part of any written TB infection-control plan. The plan should outline the responsibility and authority for maintenance and address staff training needs.

Failure to maintain environmental control systems properly has adversely impacted TB control and prevention efforts at facilities throughout the United States. At one hospital, improperly functioning ventilation controls were believed to be a factor in the transmission of MDR TB disease to four persons (three patients and a correctional officer), three of whom died (80). In three other multihospital studies evaluating the performance of AII rooms, failure to routinely monitor air-pressure differentials (whether manually or through use of continuous monitoring devices) resulted in a substantial percentage of the rooms being under positive pressure (81--84).

Correctional facilities should schedule routine preventive maintenance that covers all components of the ventilation systems (e.g., fans, filters, ducts, supply diffusers, and exhaust grilles) and any air-cleaning devices in use. Performance monitoring should be conducted to verify that environmental controls are operating as designed. Performance monitoring should include 1) directional airflow assessments using smoke tubes and use of pressure monitoring devices sensitive to pressures at 0.001 inch of water gauge and 2) measurement of supply and exhaust airflows to compare with recommended air change rates for the respective areas of the facility. Records should be kept to document all preventive maintenance and repairs.

Standard procedures should be established to ensure that 1) maintenance staff notify infection-control personnel before performing maintenance on ventilation systems servicing inmate-care areas and 2) infection-control staff request assistance from maintenance personnel in checking the operational status of AII cells and local exhaust devices (e.g., booths, hoods, and tents) before use. A protocol that is well written and followed will help to prevent unnecessary exposures of correctional facility staff and inmates to infectious aerosols. Proper labeling of ventilation system components (e.g., ducts, fans, and filters) will help identify air-flow paths. Clearly labeling which fan services a given area will help prevent accidental shutdowns (85). In addition, provisions should be

Case 3:20-cv-00832-E Document 47-3 Filed 04/18/20 Page 85 of 219 PageID 935
made for emergency power to avoid interruptions in the performance of essential environmental controls during a power failure.

Respiratory Protection

Considerations for Selection of Respirators

Respiratory protection is used when administrative (i.e., identification and isolation of infectious TB patients) and environmental controls alone have not reduced the risk for infection with *M. tuberculosis* to an acceptable level. The use of respiratory protection is most appropriate in specific settings and situations within correctional facilities. For example, protection is warranted for inmates and facility staff when they enter AII rooms, transport infectious inmates, and participate in cough-inducing procedures.

Respirators should be selected from those approved by CDC/National Institute for Occupational Safety and Health (NIOSH) under the provisions of Title 42, Part 84 of the Code of Federal Regulations (86). Decisions regarding which respirator is appropriate for a particular situation and setting should be made on the basis of a risk assessment of the likelihood for TB transmission.** For correctional facilities, a CDC/NIOSH-approved N95 air-purifying respirator will provide adequate respiratory protection in the majority of situations that require the use of respirators. If a higher level of respiratory protection is warranted, additional information on other classes of air-purifying respirators and powered air-purifying respirators (PAPRs) is available (71). The overall effectiveness of respiratory protection is affected by 1) the level of respiratory protection selected (i.e., the assigned protection factor), 2) the fitting characteristics of the respirator model, 3) the care taken in donning the respirator, and 4) the effectiveness of the respiratory protection program, including fit testing and worker training.

Implementing a Respiratory Protection Program

All facilities should develop, implement, and maintain a respiratory-protection program for health-care workers or other staff who use respiratory protection. Respiratory-protection programs are required for facilities covered by the U.S. Occupational Safety and Health Administration (OSHA) (71,87--89). The key elements of a respiratory protection program include 1) assignment of responsibility, 2) training, and 3) fit testing (71,87,90,91). All correctional facility staff who use respirators for protection against infection with *M. tuberculosis* must participate in the facility's respiratory protection program (e.g., understand their responsibilities, receive training, receive medical clearance, and engage in fit testing) (71). In addition to staff members, visitors to inmates with TB disease should be offered respirators to wear while in AII rooms and instructed on proper use. Certain regular visitors (e.g., law enforcement officials, social workers, ministers and other religious representatives, and attorneys and other legal staff) might be there in an occupational capacity. Each facility, regardless of TB risk classification (i.e., minimal or nonminimal), should develop a policy on the use of respirators by visitors of patients.

Precautions for Transporting Patients Between Correctional or Detention Facilities

Recommended precautions to take when transporting patients between facilities have been published (71). Patients with suspected or confirmed infectious TB disease should be transported in an ambulance whenever possible. The ambulance ventilation system should be operated in the nonrecirculating mode and the maximum amount of outdoor air be provided to facilitate dilution. If the vehicle has a rear exhaust fan, it should be used during transport. If the vehicle is equipped with a supplemental recirculating ventilation unit that passes air through HEPA filters before returning it to the vehicle, this unit should be used to increase the number of ACH. Airflow should be from the cab (i.e., front of vehicle) over the patient and out the rear exhaust fan. If an ambulance is not used, the ventilation system for the vehicle should bring in as much outdoor air as possible, and the system should be set to nonrecirculating. If possible, the cab should be physically isolated from the rest of the vehicle, and the patient should be placed in the rear seat. Drivers or other persons who are transporting patients with suspected or confirmed infectious TB disease in an enclosed vehicle should wear at least an N95

disposable respirator. If the patient has signs or symptoms of infectious TB disease (i.e., positive AFB sputum-smear result), consideration might be given to having the patient wear a surgical or procedure mask, if possible, during transport, in waiting areas, or when others are present.

Diagnosis and Treatment of Latent Tuberculosis Infection and Tuberculosis Disease

The principles of diagnosis and treatment of LTBI and TB disease discussed in this section are guidelines and not meant to substitute for clinical experience and judgment. Medical providers not familiar with the management of LTBI and TB disease should consult a person with expertise. All facilities' local operations procedures should include plans for consultation with and referral to persons with expertise in TB and should include criteria delineating when consultation and referral are indicated.

Although the index of suspicion for TB disease varies by individual risk factors and prevalence of TB in the population served by the correctional facility, correctional facilities typically are considered higher-risk settings (see Screening). A diagnosis of TB disease should be considered for any patient who has a persistent cough (i.e., one lasting ≥ 3 weeks) or other signs or symptoms compatible with TB disease (e.g., hemoptysis, night sweats, weight loss, anorexia, and fever). Diagnostic tests for TB include the TST, QFT-G, chest radiography, and laboratory examination of sputum samples or other body tissues and fluids.

Persons exposed to inmates with TB disease might become latently infected with *M. tuberculosis* depending on host immunity and the degree and duration of exposure. Therefore, the treatment of persons with TB disease plays a key role in TB control by stopping transmission and preventing potentially infectious cases from occurring (92). LTBI is an asymptomatic condition that can be diagnosed by the TST or QFT-G.

Interpreting TST Results

A baseline screening TST result of ≥ 10 mm induration is considered positive for the majority of correctional facility staff and inmates, and these persons should be referred for medical and diagnostic evaluation. However, for correctional facility staff and inmates who have had a known exposure in a correctional facility (i.e., close contact with an inmate or staff member with infectious TB disease) after having a previous (baseline) TST value of 0 mm, TST results of ≥ 5 mm should be considered positive and interpreted as a new infection. Correctional facility staff and inmates with a screening baseline TST result of ≥ 1 mm, but < 10 mm, who are subsequently exposed to TB disease, should be considered newly infected if they have TST values increase by ≥ 10 mm on retest (Table 3). For example, a baseline TST result with 8 mm induration and a repeat TST result 1 year later with 18 mm induration would indicate a new infection. However, a repeat TST result with 12 mm induration would not indicate a new infection.

When decisions are made for the diagnosis and treatment of LTBI and choosing the cut-off value for a positive reaction, certain risk factors (e.g., immunocompromising conditions and known contact with a TB patient) should be assessed. Correctional facility staff and inmates who have TST indurations of 5--9 mm should be advised that their results might be an indication for treatment under certain conditions.

Special Considerations in Interpreting the TST

Interpretation of the TST might be complicated by previous vaccination with BCG, anergy, and the "boosting" effect. Detailed recommendations describing how the TST should be interpreted in relation to these possible confounders have been published (64,93).

Correctional Staff and Inmates who Refuse Testing for *M. tuberculosis* Infection

A correctional facility staff member or inmate who refuses testing for *M. tuberculosis* infection should first be educated regarding the importance of routine screening of correctional facility staff and inmates. If the person continues to refuse to have a TST, the option may be offered for the person to be tested using the QFT-G test

(and vice versa). The decision to offer an alternative test depends on the reason for refusal and should be consistent with the patient's underlying wishes (e.g., offering QFT-G in place of TST is acceptable if the patient objects to having injection of a substance but agrees to having blood drawn).

Interpreting the QuantiFERON®-TB Gold Test Data

Interpretation of QFT-G data is initially performed electronically; an approved interpretation method is automatically performed by the software supplied by the manufacturer ([Table 4](#)) ([58](#)). A complete description of the test's interpretation is included in the product insert.

Persons who have a positive QFT-G result should be referred for a medical and diagnostic evaluation. On serial testing, a person with QFT-G results changing from negative to positive should be referred for medical and diagnostic evaluation and considered to be a QFT-G converter. Risk factors (e.g., the facility's prevalence of TB disease and personal risk factors) should be assessed when making decisions about the diagnosis and treatment of LTBI.

Interpreting Chest Radiographs

Persons with Suspected Pulmonary TB

Multiple types of abnormalities demonstrated on chest radiographs are strongly suggestive of pulmonary TB disease, including upper-lobe infiltration, cavitation, and pleural effusion. Infiltrates can be patchy or nodular and observed in the apical or subapical posterior upper lobes or superior segment of the lower lobes. If radiographic or clinical findings are consistent with TB disease, further studies (e.g., medical evaluation, mycobacteriologic examinations of sputa or tissue, and comparison of current and prior chest radiographs) should be performed ([65](#)). Persons with TB pleural effusions might have concurrent unsuspected pulmonary or laryngeal TB disease ([94](#)). These patients should be considered infectious until pulmonary and laryngeal TB disease is excluded. Patients with suspected extrapulmonary TB disease also should be suspected of having pulmonary TB until concomitant pulmonary disease is excluded.

The radiographic presentation of pulmonary TB in HIV-infected persons might be atypical. Apical cavitory disease is less common among such patients than HIV-negative patients. More common findings among HIV-infected persons are infiltrates in any lung zone, mediastinal or hilar adenopathy, or, in rare cases, a normal chest radiograph ([65,95--97](#)).

Persons with LTBI

To exclude pulmonary TB disease, a chest radiograph is indicated for all persons in whom LTBI is diagnosed. If chest radiographs do not indicate pulmonary TB, and no symptoms consistent with TB disease are present, persons with positive test results for TB infection should be considered for treatment for LTBI. Persons with LTBI typically have normal chest radiographs, although they might have abnormalities suggestive of previous TB disease or other pulmonary conditions. In certain patients with TB symptoms, pulmonary infiltrates might be apparent on chest computed tomography scan or magnetic resonance imaging study but not on chest radiograph. Previous, healed TB disease typically produces radiographic findings that differ from those associated with current TB disease. These findings include nodules, fibrotic scars, calcified granulomas, and apical pleural thickening. Nevertheless, a chest radiograph by itself cannot be used to distinguish between current and healed TB. Nodules and fibrotic scars might contain slowly multiplying tubercle bacilli and pose substantial risk for progression to TB disease. Calcified nodular lesions (i.e., calcified granulomas) and apical pleural thickening indicate lower risk for progression to TB disease ([65](#)).

Pregnant Women

Because TB disease is dangerous to both the mother and the fetus, a pregnant woman who has a positive TST or QFT-G result or who is suspected of having TB disease should receive a chest radiograph (with shielding

consistent with safety guidelines) as soon as feasible. If symptoms or other high-risk conditions (e.g., HIV infection) are identified, a chest radiograph might have to be performed during the first trimester of pregnancy (64,65,98).

Evaluation of Sputum Samples

Sputum examination is a key diagnostic procedure for pulmonary TB disease (93) and is indicated for the following inmates and correctional facility staff:

- persons suspected of having pulmonary TB disease because of a chest radiograph consistent with TB disease, particularly those with any respiratory symptoms suggestive of TB disease;
- persons with chest radiographic findings suggestive of previous, healed TB disease;
- HIV-infected persons with any pulmonary symptoms (regardless of chest radiograph findings); or
- persons suspected of having pulmonary TB disease for which bronchoscopy is planned (all sputum specimens should be collected and final results of staining for AFB should have been reviewed before proceeding with bronchoscopy [67]).

Specimen Collection

Persons requiring smear- and culture-sputum examination should submit at least three sputum specimens (collected 8--24 hours apart, with at least one specimen collected in the early morning) (71,99). Specimens should be collected in a sputum induction booth or in an AII room. In resource-limited settings without environmental containment, collection is safer when performed outdoors. Patients should be instructed how to produce an adequate sputum specimen, and a health-care professional should supervise and observe the collection of sputum, if possible (93). For patients who are unable to produce an adequate sputum specimen, expectoration might be induced by inhalation of an aerosol of warm, hypertonic saline (71).

Laboratory Examination

Detection of AFB in stained smears by microscopy can provide the first mycobacteriologic indication of TB disease. A positive result for AFB in a sputum smear is predictive of increased infectiousness; however, negative AFB sputum-smear results do not exclude a diagnosis of TB disease if clinical suspicion is high. In 2002, only 63% of U.S. patients with reported positive sputum cultures had positive AFB sputum smears (100).

Although smears allow for the detection of mycobacteria, definitive identification, strain typing, and drug-susceptibility testing of *M. tuberculosis* can be performed only via culture (93). A culture of sputum or other clinical specimen that contains *M. tuberculosis* provides a definitive diagnosis of TB disease. In the majority of cases, identification of *M. tuberculosis* and drug-susceptibility results are available within 28 days using recommended rapid methods (e.g., liquid culture and DNA probes). A negative culture result is obtained in approximately 14% of patients with confirmed pulmonary TB disease (100). Testing sputum with certain techniques (e.g., nucleic acid amplification [NAA]) facilitates the rapid detection and identification of *M. tuberculosis*, but should not replace culture and drug-susceptibility testing in patients with suspected TB disease (88,101,102). Recommendations for use and interpretation of NAA tests in the diagnosis of TB disease have been published previously (101,102).

Laboratories should report positive smear results within 24 hours of collection and positive cultures within 24 hours of the notation of the positive culture. Drug-susceptibility tests should be performed on initial isolates from all patients to assist in the identification of an effective anti-TB regimen. Drug-susceptibility tests should be repeated if 1) sputum specimens continue to be culture-positive 3 months after initiation of treatment or if 2) persons whose cultures had converted to negative subsequently revert to positive (65,93).

Treatment for LTBI

Treatment for LTBI is essential to controlling and eliminating TB disease in the United States because it substantially reduces the risk that TB infection will progress to TB disease (23). Certain persons are at high risk for developing TB disease once infected, and every effort should be made to begin these persons on a standard LTBI treatment regimen and to ensure that they complete the entire course of treatment for LTBI. Before treatment for LTBI is started, TB disease should be ruled out by history, medical examination, chest radiography, and when indicated, mycobacteriologic studies.

Candidates for Treatment of LTBI

Correctional facility staff and inmates in the following high-risk groups should be given treatment for LTBI if their reaction to the TST is ≥ 5 mm, regardless of age (64,65):

- HIV-infected persons,
- recent contacts of a TB patient,
- persons with fibrotic changes on chest radiograph consistent with previous TB disease, and
- patients with organ transplants and other immunocompromising conditions who receive the equivalent of ≥ 15 mg/day of prednisone for ≥ 1 month.

All other correctional facility staff and inmates should be considered for treatment of LTBI if their TST results are ≥ 10 mm induration. If QFT-G is used, any correctional facility staff member or inmate with a positive QFT-G result should be considered for LTBI treatment. Decisions regarding initiation of LTBI treatment should include consideration of the likelihood of the patient continuing and completing LTBI treatment under supervision if released from the facility before the treatment regimen is completed.

Persons with previously positive TST results who have previously completed treatment for LTBI (i.e., ≥ 6 months of isoniazid, 4 months of rifampin, or another regimen) do not need to be treated again unless concern exists that reinfection has occurred. Other persons who might be poor candidates for treatment of LTBI include those with a previous history of liver injury or a history of excessive alcohol consumption; active hepatitis and end-stage liver disease are relative contraindications to the use of isoniazid or pyrazinamide for treatment of LTBI (64,103). If the decision is made to treat such patients, baseline and follow-up monitoring of serum aminotransaminases are recommended.

Treatment Regimens for LTBI

Standard regimens have been developed for the treatment of LTBI (Table 5). The preferred treatment for LTBI is 9 months of daily isoniazid or biweekly dosing administered by DOT. Although regimens are broadly applicable, modifications should be considered for certain populations (e.g., patients with HIV infection) and when drug resistance is suspected.

Reports of severe liver injury and death associated with the combination of rifampin and pyrazinamide for treatment of LTBI prompted ATS and CDC to revise previous recommendations. These recommendations now state that this regimen typically should not be offered for the treatment of LTBI (64,103--107). If the potential benefits substantially outweigh the demonstrated risk for severe liver injury and death associated with this regimen and the patient has no contraindications this regimen may be considered; a physician with experience treating LTBI and TB disease should be consulted before use of this regimen (103). Clinicians should continue the appropriate use of rifampin and pyrazinamide in standard multidrug anti-TB regimens for the treatment of TB disease (65).

For all LTBI treatment regimens, nonadherence to intermittent dosing results in a larger proportion of total doses missed than daily dosing; therefore, all patients on intermittent treatment should receive DOT. In addition, DOT should be used with daily dosing of LTBI treatment whenever feasible. Patients with the highest priority for DOT are those at the highest risk for progression from LTBI to TB disease, including persons with HIV infection and persons who are recent contacts of infectious patients with pulmonary TB.

Contacts of Patients with Drug-Susceptible TB Disease

Contacts of patients with drug-susceptible TB disease who once tested negative but subsequently have a positive TST result (i.e., ≥ 5 mm) should be evaluated for treatment of LTBI. The majority of persons who are infected will have a positive TST result within 6 weeks of exposure; therefore, contacts of patients with drug-susceptible TB disease who have initial negative TSTs should be retested 8--10 weeks after the end of exposure to a patient with suspected or confirmed TB disease (108). Persons with TB infection should be advised that they can be re-infected with *M. tuberculosis* if re-exposed (109--111). If they have not been treated previously,

HIV-infected persons (regardless of TST result or previous LTBI treatment history), persons receiving immunosuppressive therapy (regardless of TST result or previous LTBI treatment history), and persons with a known previous (to current exposure) positive TST also should be considered for LTBI treatment.

Treatment of LTBI should not be started until a diagnosis of TB disease has been excluded. If the presence of TB disease is uncertain because of an equivocal chest radiograph, a standard multidrug anti-TB therapy might be started and adjusted as necessary, depending on the results of sputum cultures, drug-susceptibility tests, and clinical response (65). If cultures are obtained without initiating therapy for TB disease, treatment for LTBI should not be initiated until all cultures are reported as negative, which might take 6--8 weeks.

Contacts of Patients with Drug-Resistant TB Disease

Treatment for LTBI caused by drug-resistant *M. tuberculosis* organisms is complex and should be conducted in consultation with the local health department's TB control program and persons with expertise in the medical management of drug-resistant TB. Often this will require waiting for results of susceptibility testing of the isolate from the presumed source patient. Treatment should be guided by in vitro susceptibility test results from the isolate to which the patient was exposed (65, 112, 113).

Pretreatment Evaluation and Monitoring of Treatment

Routine laboratory monitoring during treatment of LTBI is indicated only for patients with abnormal baseline tests and for persons at risk for hepatic disease. Baseline laboratory testing is indicated only for persons infected with HIV, pregnant women, women in the immediate postpartum period (typically within 3 months of delivery), persons with a history of liver disease, persons who use alcohol regularly, and persons who have or who are at risk for chronic liver disease (64).

All patients should undergo clinical monitoring at least monthly. This monitoring should include 1) a brief clinical assessment regarding the signs of hepatitis (i.e., nausea, vomiting, abdominal pain, jaundice, and yellow or brown urine) and 2) education about the adverse effects of the drug(s) and the need for prompt cessation of treatment and clinical evaluation should adverse effects occur. All aspects of the clinical encounter should be conducted in private and in the patient's primary language.

Severe adverse events associated with the administration of tuberculin antigen or treatment of LTBI or TB disease (e.g., those resulting in hospitalization or death) should be reported to MedWatch, FDA's Safety Information and Adverse Event Reporting Program at telephone 800-FDA-1088, by facsimile at 800-FDA-0178, or via the Internet by sending Report Form 3500 (available at <http://www.fda.gov/medwatch/safety/3500.pdf>). Instructions regarding the types of adverse events that should be reported are included on MedWatch report forms. In addition, severe adverse effects associated with LTBI treatment should be reported to CDC's Division of Tuberculosis Elimination at telephone 404-639-8118.

Treatment for TB Disease

A decision to initiate treatment (i.e., combination anti-TB chemotherapy) should be made on the basis of epidemiologic information; clinical, pathological, and radiographic findings; and the results of microscopic examination of AFB-stained sputum smears and cultures for mycobacteria. A positive AFB-smear result

provides strong inferential evidence for the diagnosis of TB, and combination chemotherapy should be initiated promptly unless other strong evidence against the diagnosis of TB disease is present (e.g., a negative NAA test).

If the diagnosis is confirmed by isolation of *M. tuberculosis* or a positive NAA test, treatment should be continued until a standard course of therapy is completed. Because as few as 50% of patients with positive sputum culture results for *M. tuberculosis* will have negative sputum AFB-smear results (93), when initial AFB-smear results are negative, empiric therapy for TB is indicated if the clinical suspicion for TB disease is high.

Regardless of the decision to begin anti-TB treatment, diagnoses other than TB should be considered and appropriate evaluations undertaken in patients with negative AFB-smear results. A diagnosis of culture-negative pulmonary TB can be made if sputum cultures are negative, the TST result is positive (in this circumstance, a reaction of ≥ 5 mm induration is considered positive), a clinical or radiographic response is observed 2 months after the initiation of therapy, and no other diagnosis has been established. An adequate regimen for culture-negative pulmonary TB includes an additional 2 months of isoniazid and rifampin to complete 4 months of treatment (65). If no clinical or radiographic response is observed by 2 months, treatment can be stopped, and other diagnoses (including inactive TB) should be considered. If AFB-smear results are negative, and suspicion for TB disease is low, treatment can be deferred until the results of mycobacterial cultures are known and a comparison chest radiograph is available (typically at 2 months). Among persons who have not begun treatment and in whom suspicion of TB is low, treatment of LTBI should be considered if 1) cultures are negative, 2) the TST result is positive (≥ 5 mm induration), and 3) the chest radiograph is unchanged after 2 months. A person with TB expertise should be consulted for unusual or complex situations.

Individualized case management should be provided for all patients with TB disease (114--116). In addition, patient management should be coordinated with officials of the local or state health department; suspected or confirmed TB cases should be reported to the local or state health department in accordance with laws and regulations. Regimens for treating TB disease should contain multiple drugs to which the organisms are susceptible. For persons with TB disease, treatment with a single drug can lead to the development of mycobacterial resistance to that drug. Similarly, adding a single drug to a failing anti-TB regimen is not recommended because it can lead to resistance to the added drug (65).

For the majority of patients, the preferred regimen for treating TB disease consists of an initial 2-month phase of isoniazid, rifampin, pyrazinamide, and ethambutol, followed by a continuation phase of isoniazid and rifampin lasting ≥ 4 months, for a minimum total treatment period of 6 months (Tables 6 and 7). The decision to stop therapy should be made on the basis of the number of doses taken within a maximum period (not simply a 6-month period) (65). Persons with cavitary pulmonary TB disease and positive cultures of sputum specimens at the completion of 2 months of therapy should receive a longer, 7-month continuation phase of therapy (total duration: 9 months) because of the substantially higher rate of relapse among persons with this type of TB disease (65).

If interruptions in TB therapy occur, the decision should be made whether to restart a complete course of treatment or continue the regimen as originally intended. In the majority of instances, the earlier the break in therapy and the longer its duration, the more serious the effect and the greater the need to restart the treatment from the beginning. Continuous treatment is more important in the initial phase of therapy, when the bacillary burden is highest and the chance of developing drug resistance is greatest. Although no evidence on which to base detailed recommendations exists, examples of practical algorithms for managing interruptions in therapy have been described previously (65).

For HIV-infected persons who are receiving antiretroviral therapy, TB treatment regimens might need to be altered. Whenever possible, the care of persons with concomitant TB and HIV should be provided by or in consultation with persons with expertise in the management of both TB and HIV-related disease (65). To prevent the emergence of rifampin resistance, persons with TB, HIV, and CD4⁺ T-lymphocyte cell counts <100 cells/mm³ should not be treated with highly intermittent (i.e., once- or twice-weekly) regimens. These patients should instead receive daily therapy during the intensive phase (i.e., first 2 months) and receive daily dosing or 3 doses per week by DOT during the continuation phase (117). Antiretroviral therapy should not be withheld because the patient is being treated for TB if it is otherwise indicated. Nevertheless, beginning both antiretroviral therapy and combination chemotherapy for TB at nearly the same time is not advisable. Although

data on which to base recommendations are limited, experience in the fields of HIV and TB suggests that treatment for TB should be initiated first. Delaying the initiation of antiretroviral therapy until 4--8 weeks after starting anti-TB therapy is advantageous because it 1) better enables providers to ascribe a specific cause to a drug side effect, 2) decreases the severity of paradoxical reactions, and 3) decreases adherence challenges for the patient. Until controlled studies have been conducted that evaluate the optimal time for starting antiretroviral therapy in patients with HIV infection and TB, this decision should be individualized on the basis of 1) the patient's initial response to treatment for TB, 2) the occurrence of side effects, and 3) the availability of multidrug antiretroviral therapy. Because drug-drug interactions might be less frequent with use of rifabutin, substitution of rifabutin for rifampin might be indicated with certain antiretroviral medications. Detailed information on TB treatment in HIV-infected persons has been published ([65,107](#)). Updates are posted on the Internet as new findings become available (at http://www.dhfs.state.wi.us/aids-hiv/resources/overviews/aids_hiv.htm, <http://www.hiv-druginteractions.org>, and http://www.cdc.gov/nchstp/tb/tb_hiv_drugs/toc.htm).

Drug-susceptibility testing should be performed on all initial isolates from patients with TB disease. When results from drug-susceptibility tests become available, the treatment regimen should be adjusted accordingly ([65,113,114,118,119](#)) ([Tables 6 and 7](#)). Medical providers treating patients with drug-resistant TB disease should seek expert consultation and collaborate with the local health department for treatment decisions ([65](#)).

The primary determinant of treatment outcome is patient adherence to the drug regimen. Thus, careful attention should be paid to measures designed to enable and foster adherence ([65,119,120](#)). DOT is the preferred treatment strategy for all persons with TB disease and high-risk (e.g., HIV infected) persons with LTBI. DOT should be used throughout the entire course of therapy whenever feasible. Practitioners providing treatment to inmates should coordinate DOT with the local health department on an inmate's release. The local health department also may be involved in monitoring therapy for correctional facility staff ([65](#)).

Challenges to Treatment Completion

Achieving completion of treatment for LTBI or TB disease often is difficult, particularly in correctional facilities. Movement of inmates both within and outside of correctional systems interferes with continuity of care and might lead to treatment default ([121](#)). Comprehensive case management that includes discharge planning and coordination with other correctional facilities and health departments is needed to ensure completion of therapy for patients with TB disease and LTBI ([42](#)).

Multiple studies have demonstrated that inmates have relatively low LTBI treatment completion rates, particularly those in jails who are likely to be released before their therapy has been completed ([14,28,40,122](#)). For a substantial proportion of inmates, referrals for follow-up after release are not made; of inmates whose appointments are scheduled, 40%--60% will not attend their first clinic visit ([36,40](#)). Multiple interventions have been attempted to improve LTBI treatment completion in this population, including patient education while in jail, use of incentives, and use of DOT ([61,122,123](#)). None of these strategies has had substantial success, although patient education and use of DOT have increased completion rates modestly in certain situations ([61,122](#)). Active case management, as recommended for TB disease, should be considered as a next step in improving the completion rates for LTBI treatment ([14,42](#)).

Discharge Planning

Correctional facilities should plan for the discharge of inmates and other detainees who have confirmed or suspected TB disease and those with LTBI who are at high risk for TB disease. Such planning is crucial to effective local TB control efforts within the community to which released inmates return. Facilities should ensure that their discharge plan is comprehensive and effective; the process should include 1) collaborating with public health and other community health-care professionals, 2) ensuring continuity of case-management, and 3) evaluating discharge-planning procedures and modifying procedures as needed to improve outcomes.

Collaboration Between Correction Facilities and Public Health Officials

Postconfinement follow-up is a necessary component of TB-control efforts (35,124). Effective discharge planning requires collaboration between corrections and medical staff (both intra- and inter-facility), and with public health and community-based service organizations (37). Correctional facilities and public health departments should overcome multiple obstacles associated with postdetention follow-up (125), including

- short length of stay in a facility;
- unscheduled release or transfer;
- poorly defined or implemented channels of communication between correctional and public health authorities;
- limited resources (i.e., staff, equipment, and medications) available to provide recommended TB prevention, screening, treatment, and discharge-planning services;
- limited resources of the patient to make or keep appointments;
- high prevalence of mental illness and substance abuse among correctional patients;
- mistrust among inmates, which might result in the provision of aliases or incorrect contact or locating information; and
- reincarceration with disruption in treatment or termination of public benefits.

Collaboration is essential to ensure that TB-control efforts are undertaken in the most cost-effective manner. Coordination between the correctional facility and the public health department maximizes the effectiveness of any efforts begun in a correctional facility (126), and linking released detainees to the public health-care system might improve post-release adherence (35) and reduce recidivism (127,128). The types of relationships forged will depend on the assessment of the TB risk in the facility and the community.

Comprehensive Discharge Planning

Comprehensive discharge planning is an important component of case management and is essential for ensuring the continuity of TB management and therapy among persons with TB disease and LTBI. Following release, former inmates face housing, employment, and other crises concerning basic needs that often take priority over their health. Multiple reports from the United States and other countries support the use of comprehensive discharge planning in TB control efforts (42,129,130). Comprehensive discharge planning should be implemented for inmates with confirmed TB disease, suspected TB disease, and LTBI who also are at high risk for TB disease.

Discharge planning for persons with LTBI who are considered at high risk for developing TB disease is critical if treatment is begun in the correctional facility. Starting all inmates at high risk on LTBI therapy might not be feasible while they are in the correctional facility, and the policy determining which risk groups to start on treatment should be made in collaboration with public health personnel. Collaboration ensures appropriate communication and adequate resources for treatment after transfer to another facility or after release to the community. At minimum, all inmates who have begun therapy for LTBI in a correctional facility should be given community contact information for follow-up and continuity of care. Ideally, all inmates demonstrated to be infected with TB should be considered for therapy, and discharge planning to facilitate therapy should be comprehensive (124). Because of high recidivism rates, discharge-planning efforts should begin in the detention phase and continue in the post-detention phase to ensure continuity of care as inmates move among different facilities and between correctional facilities and the community.

Components of Discharge Planning

Initiate Discharge Planning Early

To ensure uninterrupted treatment, discharge planning for inmates who receive a diagnosis of TB disease should begin as soon as possible after diagnosis (131). Corrections or health services administrators (or their designees)

should assign staff to notify the public health department of inmates receiving treatment for TB disease or LTBI. Inmates with TB disease should be interviewed while still incarcerated (ideally by public health staff) to enable facility administrators to assess and plan for the appropriate support and referrals that will be needed after discharge (131). Such personnel also should communicate with other facilities in the event of transfers of inmates.

Provide Case Management

To ensure continuity of care, all correctional facilities should assign personnel (preferably health-care professionals) to serve as case managers. These managers should be responsible for conducting discharge planning in the facility, which entails coordinating follow-up and communicating treatment histories with public health department and other health-care counterparts within the community (42). In addition, case managers should employ strategies (e.g., mental-illness triage and referral, substance-abuse assessment and treatment, and prerelease appointments for medical care) to help former inmates meet basic survival needs on release. The role of case manager should be assigned to a facility staff member who is capable of establishing good rapport with inmates; an effective case manager might be capable of persuading TB patients who are being released into the community to supply accurate information needed to ensure follow-up care.

The following factors should be considered when planning community discharge of an inmate receiving treatment for TB (132):

- Where will the ex-inmate reside after discharge (e.g., a permanent residence, a halfway house, or a shelter)?
- Will family or other support be available?
- Are cultural or language barriers present?
- What kind of assistance will be needed (e.g., housing, social services, substance abuse services, mental health services, medical services, and HIV/AIDS services)?
- Does the inmate understand the importance of follow-up and know how to access health-care services?

Obtain Detailed Contact Information

To facilitate the process of locating former inmates, detailed information should be collected from all inmates with TB disease or LTBI for whom release is anticipated, including 1) names, addresses, and telephone numbers of friends, relatives, and landlords; 2) anticipated place of residence; and 3) areas typically frequented (e.g., restaurants, gyms, parks, and community centers) (61,133). Inmates also should complete a release form authorizing health department personnel to contact worksites, family members, corrections staff (parole officers), and public and private treatment centers. Inmates might give aliases or incorrect contact information because of fear of incrimination or deportation. The use of an alias can be a barrier to continuity of care on reentry to a correctional facility.

Assess and Plan for Substance Abuse and Mental Health Treatment and for Other Social Services

Substance abuse and other comorbid mental health conditions should be considered when developing a comprehensive discharge plan. Addiction affects health care, medication adherence, housing opportunities, social relationships, and employment and might be the greatest barrier to continuity of care for TB (134).

Mental illness can be a barrier when community service providers have not been trained to interact with mentally ill patients. Persons who are mentally ill might have difficulties keeping medical appointments.

Collaboration between corrections and health department personnel can facilitate the placement of former inmates in substance abuse or mental-health treatment programs to improve the likelihood of social stabilization and continuity of care (134,135).

Other social issues present barriers to released inmates. Loss of health insurance benefits while incarcerated is common, and former inmates might be required to wait 30--365 days after release to become re-eligible for benefits (136,137). Certain correctional facilities have agreements with local Social Security Administration field offices to facilitate swift reactivation of these benefits (138); creation of and training in the use of such

agreements are encouraged. Ideally, on entry into the correctional system, public benefits would be suspended, rather than terminated, and reactivated on release to eliminate gaps in coverage. Application for public benefits and insurance should be incorporated into the discharge planning phase whenever possible. If the inmate is likely to have limited access to care because of inability to pay for services on release, documentation should be made and another treatment mechanism identified (139).

Make Arrangements for Postrelease Follow-Up

Before release, the inmate should be introduced (preferably face to face) to the employee from the community treatment agency who is responsible for community-based treatment and care (139). When release dates are known, setting post-release appointments has been demonstrated to improve compliance (128,134,140). Patients with TB disease should be given a supply of medication at discharge adequate to last until their next medical appointment. Discharge planners can work with advocacy groups or private or government-funded programs to facilitate a safe, supported transition into the community (61).

Make Provisions for Unplanned Release and Unplanned Transfers

Administrative procedures should be in place for unscheduled discharge of inmates who are being managed or treated for TB (36,141). Reporting requirements for inmates with TB disease who are released or transferred to another facility vary among states and jurisdictions. Despite mandatory notification policies, notification of public health officials varies from 87%--92% for inmates with TB disease (37,126) to only 17% for inmates with LTBI (36,37). Correctional facility staff responsible for health department notification should relay information about all scheduled and unscheduled releases as it becomes available. All TB information concerning persons who are being transferred to other correctional settings should be provided to the receiving facility. In addition, inmates should be given a written summary or discharge card outlining their treatment plan to ensure continuity of care in case of unplanned and unanticipated release (131,142). Inmates with TB disease who are eligible for release or transfer to another medical or correctional facility but continue to be infectious should remain in airborne precautions during and after transfer until noninfectious (132).

Provide Education and Counseling

Patient education and documentation of education in the correctional facility is critical; multiple misconceptions persist among inmates and facility staff regarding means of transmission, differences between infection and disease, and methods of prevention and treatment for TB (143). Persons receiving treatment should be counseled about the importance of adhering to the treatment plan (131) as a measure to improve postrelease follow-up (61). Education should be delivered in the inmate's first preferred language and should be culturally sensitive with respect to ethnicity, sex, and age (135,144--147). The inmate should be actively involved in all education sessions to encourage communication regarding previous transition experiences (e.g., the inmate's treatment motivations and any positive or negative experiences with specific providers) (141). Inmates with LTBI who have not been started on therapy should be counseled on their risk factors, encouraged to visit the public health department, and provided with information about access to care after release.

DOT

DOT for TB disease or LTBI in the correctional setting provides an opportunity for educating and counseling inmates and for establishing a routine of medication administration. The effect, if any, of DOT on postrelease behavior has not been evaluated formally, but this practice might enhance adherence (122).

Community-Based Case Management after Release

Case-management strategies begun in the correctional facility should be continued after release for former inmates with confirmed or suspected TB disease and those with LTBI who are at high risk for progression to TB disease. Incentives and enablers (see Glossary) have improved adherence in incarcerated (35,60,61) and nonincarcerated (148,149) populations, and incentives combined with education and counseling optimize both

short- and long-term adherence (40,60,61,150). Case management that takes into account cultural differences and addresses not only TB-control matters but patient-defined needs (particularly among foreign-born persons) results in improved completion rates for LTBI therapy (145). Case management by health department personnel after release is critical for continuity of care in the event of reincarceration. The provision of follow-up information from local health departments and community-based organizations back to corrections staff is helpful in determining whether discharge planning is effective.

Discharge Planning for Immigration and Customs Enforcement Detainees

Background

Persons with TB disease detained by ICE officers are a potential public health threat because they typically are highly mobile, likely to leave and reenter the United States before completion of TB therapy, and at high risk for interrupting treatment (151). Therefore, ensuring treatment of such detainees is important to the national strategy to eliminate TB in the United States (32,152).

In March 2003, the detention and removal functions of the former Immigration and Naturalization Service (INS) were transferred from the U.S. Department of Justice (DOJ) to the U.S. Department of Homeland Security (DHS). ICE is a division of DHS and detains approximately 200,000 persons annually while enforcing immigration law. ICE detainees are screened for TB disease at service processing centers, staging facilities, contract detention facilities, and local jails. Frequent transfers of ICE detainees between detention facilities are common.

ICE detention provides an opportunity to identify persons with confirmed and suspected TB disease and initiate treatment, if appropriate. ICE detainees with confirmed or suspected TB disease receive treatment while they are in custody. Presently, ICE does not deport detainees with known infectious TB, but such persons might be deported when noncontagious, even if treatment has not been completed or the final culture and susceptibility results are pending.

Discharge Planning for ICE Detainees

In May 2004, ICE approved a policy to implement a short-term medical hold of persons with suspected or confirmed TB disease until continuity of care is arranged, which affords the ICE health services program the time needed to facilitate continuity of TB therapy arrangements before the patient's release or removal. The ICE health services program seeks to enroll all persons with confirmed or suspected TB disease in programs that facilitate the continuity of TB therapy between countries. These programs (e.g., CureTB, TB Net, and the U.S.-Mexico Binational Tuberculosis Referral and Case Management Project) facilitate TB referrals and follow-up for patients who move between the United States and other countries.

ICE field office directors may consider a stay of removal for persons with MDR TB or other complicated cases, so they can receive and complete treatment in the United States before removal. In detention settings in which ICE detainees are held, facility staff who are responsible for TB communication should notify the ICE health services program of persons with confirmed or suspected TB disease. Collaboration with detention facilities and local and state health departments will facilitate enrollment in the appropriate continuity of care program before transfer, release, or repatriation. Correctional facility staff should identify these patients as ICE detainees when reporting TB cases to local and state health departments.

Evaluation of Discharge Planning Effectiveness

Evaluation of a discharge planning program is critical and should begin with an assessment of existing programs and activities. Program evaluation should be incorporated into the overall correctional quality improvement/assurance program (153). Data from program evaluation studies should be documented and published to ensure that correctional facility and public health department staff are informed regarding effective

measures and the effective translation of research findings into practice (129). Evaluation of discharge planning should include measurements of

- adherence to therapy,
- cost savings (from unduplicated testing for persons with LTBI and completion of care without re-starts and extensions),
- recidivism, and
- the effectiveness of the collaboration between medical and corrections staff (both within and among facilities) and between correctional facilities and the public health department and other community agencies.

Contact Investigation

Overview

Multiple outbreaks of TB, including those involving MDR TB, have been reported in prisons and jails, particularly among HIV-infected inmates (17,22,45,154). The identification of a potentially infectious case of TB in a correctional facility should always provoke a rapid response because of the potential for widespread TB transmission. A prompt public health response in a confined setting can prevent a TB outbreak or contain one that has already begun (16,21,155).

The overall goal of a TB contact investigation is to interrupt transmission of *M. tuberculosis*. Ongoing transmission is prevented by 1) identifying, isolating, and treating persons with TB disease (source and secondary-case patients) and 2) identifying infected contacts of the source patient and secondary patients and providing them with a complete course of treatment for LTBI. The contact investigation can serve to educate corrections staff and inmates about the risk, treatment, and prevention of TB in correctional facilities; inform staff and inmates regarding the importance of engaging in recommended TB-control practices and procedures within the correctional system; and emphasize the importance of completion of therapy for persons with TB disease and LTBI.

Because decisions involved in planning and prioritizing contact investigations in correctional facilities are seldom simple, a multidisciplinary team is preferable. Health departments often can help correctional facilities in planning, implementing, and evaluating a TB contact investigation.

Data collection and management is an essential component of a successful investigation (21,36). It requires a systematic approach to collecting, organizing, and analyzing TB-associated data. As part of the contact investigation, all staff and investigation personnel should adopt a uniform approach. Investigators should have a clear understanding of how a contact is defined and what constitutes an exposure (156--158).

Two correctional information systems are critical to the efficient conduct of a contact investigation: 1) an inmate medical record system containing TST results and other relevant information and 2) an inmate tracking system. The lack of either system can lead to the unnecessary use of costly personnel time and medical evaluation resources (e.g., TSTs and chest radiographs). Without these information systems, facilities also might be forced to implement costly lockdowns and mass screenings.

TB Transmission Factors

TB transmission is determined by the characteristics of the source patient and exposed contacts; the circumstances surrounding the exposure itself also determine whether ongoing transmission will occur. The following variables should be accounted for when planning each contact investigation.

Characteristics of the Source Patient

Source patients who have either cavitation on chest radiograph or AFB smear-positive respiratory specimens are substantially more likely to transmit TB than persons who have neither characteristic (159--163). Delays in TB diagnosis in source patients have also been associated with an increased likelihood of transmission (164). Nonetheless, substantial variability exists among the infectiousness of a given TB source patient. Although AFB smear status, cavitory disease, and delayed diagnosis increase the likelihood of transmission, certain persons with these characteristics infect few persons, whereas others with none of these characteristics might infect multiple persons. The best measure of the infectiousness of source patients is the documented infection rate among their contacts.

Characteristics of Persons Who Have Been Identified as Contacts

Immunosuppression. HIV infection is the greatest single risk factor for progression to TB disease. Therefore, HIV-infected contacts should receive the highest priority for evaluation of TB infection, even if these persons had shorter duration of exposure than other contacts. Persons receiving prolonged therapy with corticosteroids, chemotherapy for cancer, or other immunosuppressive agents (e.g., TNF- α antagonists) also should be considered high priority for investigation. In addition, persons with end-stage renal disease and diabetes mellitus should be promptly evaluated, because these conditions are associated with compromised immune function.

Age. Young children (i.e., those aged <4 years) are at high risk for rapid development of TB disease, particularly TB meningitis. If an inmate with TB identifies a young child as a community contact, a health department referral should be made immediately.

Exposure Characteristics

Air volume. The volume of air shared between an infectious TB patient and susceptible contacts is a major determinant of the likelihood of transmission. Infectious particles become more widely distributed as air space increases, rendering them less likely to be inhaled.

Ventilation. Ventilation is another key factor in the risk for airborne transmission of disease. Airborne infectious particles disperse throughout an entire enclosed space; thus, if air is allowed to circulate from the room occupied by an infectious patient into other rooms or central corridors, their occupants also will be exposed. Areas that have 1) confined air systems with little or no ventilation or 2) recirculated air without HEPA filtration have been associated with increased TB transmission.

Duration of exposure. Although transmission of TB has occurred after brief exposure, the likelihood of infection after exposure to an infectious patient is associated with the frequency and duration of exposure. However, defining what constitutes a substantial duration of exposure for any given contact is difficult. When conducting a contact investigation, priority should be given first to inmates and employees who were most exposed to the source patient (21,154,162).

Decision to Initiate a Contact Investigation

The decision to initiate a contact investigation for an inmate or detainee with possible TB is made on a case-by-case basis. Each potential source patient's clinical presentation and opportunities for exposure should be evaluated. Contact investigations should be conducted in the following circumstances:

- **Suspected or confirmed pulmonary, laryngeal, or pleural TB with cavitory disease on chest radiograph or positive AFB smears (sputum or other respiratory specimens).** If the sputum smear is positive and the NAA is negative, TB is unlikely, and a contact investigation typically can be deferred. A negative NAA on an AFB-smear-negative specimen, however, should not influence decisions about the contact investigation (102).
- **Suspected or confirmed pulmonary (noncavitory) or pleural TB with negative AFB smears (sputum or other respiratory specimens) and a decision has been made to initiate TB treatment.** A more

limited initial investigation may be conducted for smear-negative cases.

Contact investigations typically are not indicated for extrapulmonary TB cases (except for laryngeal and pleural TB), unless pulmonary involvement is also diagnosed.

The decision as to whether the facility should conduct a contact investigation should be guided by the probability that an inmate or employee has pulmonary TB. Sputum results for AFB serve as a major determinant (165). However, in certain patients with pulmonary TB, collecting sputum samples is not feasible. In this circumstance, other types of respiratory specimens (e.g., those from bronchoscopy) may be collected for AFB smear and mycobacterial culture.

Principles for Conducting the Contact Investigation

No simple formula has been devised for deciding which contacts to screen in a correctional facility contact investigation. However, the investigation should be guided by the following basic principles:

- Identified contacts should be stratified by their duration and intensity of exposure to the source patient.
- HIV-infected contacts should be classified as the highest priority group for screening and initiation of LTBI therapy, regardless of duration and intensity of exposure.
- Identified groups of contacts with the greatest degree of exposure should be screened immediately, followed by repeat testing at 8--10 weeks if the initial TST or QFT-G is negative.
- The infection rate should be calculated to assess the level of TB transmission.
- Decisions to expand the contact investigation to groups with less exposure should be made on the basis of the calculated infection rate. If no evidence of transmission is observed, the investigation should not be expanded. If transmission is occurring, the investigation should be expanded incrementally to groups with less exposure. When the group screened shows minimal or no evidence of transmission, the contact investigation should not be expanded further.
- Corrections and medical staff should be included in the contact investigation depending on their exposure risks.

Ideally, decisions about structuring the contact investigation should be made collaboratively with the contact investigation team that includes input from the state or local health department. For certain investigations, screening a convenience sample before expanding the investigation is prudent. For example, in jail investigations, multiple contacts might already have been released, rendering those who remain incarcerated the only available group for screening. If a substantial number of high priority contacts cannot be evaluated fully, a wider contact investigation should be considered.

The investigation should focus on identifying the contacts at highest risk for transmission, screening them completely, and providing a full course of LTBI treatment for persons demonstrated to be infected. In general, because wide-scale investigations divert attention away from the high priority activities necessary to interrupt transmission in the facility, mass screening of all persons who had any contact with the source patient should be avoided (166). Rarely is a person so infectious that wide-scale expansion of the contact investigation is necessary or beneficial.

Medical Evaluation of Contacts

Appropriate medical evaluation depends on both the immunologic status (e.g., HIV infection) of the contact and previous TST or QFT-G results. Adequate knowledge of these data is possible only through use of a medical record system that is complete, up-to-date, and reliable with regard to TST or QFT-G status, testing date, and documentation of the reading in millimeters (for TST). Without an adequate medical record system (and therefore definitive information regarding prior TST or QFT-G results), the true infection and transmission rates cannot be determined. The lack of such information is likely to lead to unnecessary expansion of the contact investigation.

All Contacts

All contacts should be interviewed for symptoms of TB disease using a standard symptom questionnaire.

Symptomatic contacts should receive a chest radiograph and a complete medical evaluation by a physician, regardless of TST or QFT-G status; they also should be isolated appropriately (i.e., inmates should be placed in an AII room if infectious TB is suspected by chest radiograph or clinical findings; staff should not be permitted to work).^{††} HIV testing should be considered for all contacts whose HIV status is unknown.

Inmates with Documented Previous Positive TST or QFT-G results

Inmates who are asymptomatic, HIV-negative, and have previous positive TST or QFT-G results need no further follow-up, other than consideration for "routine" treatment of LTBI, if not completed in the past. However, if such an inmate has any signs or symptoms suggestive of TB, further evaluation should be conducted (e.g., a chest radiograph for persons with respiratory symptoms).

HIV-Infected Inmates

HIV-infected contacts should be interviewed for symptoms, have a TST or QFT-G and chest radiograph performed, and initiate a complete course of treatment for LTBI (once TB disease has been ruled out), regardless of the TST or QFT-G result. Treatment should be initiated even for persons with a history of previous treatment for LTBI or TB disease because of the possibility of re-infection. Those with a history of a negative TST or QFT-G should have a TST or QFT-G placed at baseline and again in 8--10 weeks. The results of the TST or QFT-G will not affect treatment decisions, but they will provide important information for the contact investigation. Anergy testing is not recommended ([52](#)).

Previous TST-Negative or QFT-G--Negative Inmates (HIV Negative)

Mandatory tuberculin skin or QFT-G testing of all previously TST- or QFT-G--negative inmate contacts should be conducted at baseline (unless previously tested within 1--3 months of exposure). Testing should be repeated 8--10 weeks from the most recent contact with the source patient ([58,167](#)).

TST and QFT-G Converters

Persons whose TSTs or QFT-Gs convert or those with newly documented, positive TST or QFT-G results should be offered treatment for LTBI unless medically contraindicated. If inmate contacts refuse medically indicated treatment for LTBI, they should be monitored regularly for symptoms. Certain facilities have chosen to monitor HIV-infected contacts with follow-up chest radiographs.

Contact Investigation Stepwise Procedures

The following steps are involved in conducting a contact investigation and might overlap in time. As soon as a person is confirmed or suspected of having TB disease, the case should be reported to the appropriate local health authorities and contacts promptly evaluated.

- **Notify correctional management officials.** Identification of TB in an inmate or facility staff member can be alarming for other inmates, corrections staff, and the community. The administrator should be notified through appropriate chain of command that a case of TB has been identified in the institution so that appropriate briefing and educational efforts can be initiated.
- **Conduct a source patient chart review.** The following data (with specific dates) should be collected: 1) history of previous exposure to TB, 2) history of TB symptoms (e.g., cough, fever, and night sweats), 3) weight history (particularly unexplained weight loss), 4) chest radiograph reports, 5) previous TST or QFT-G results, 6) mycobacteriology results (e.g., AFB smears, cultures, and susceptibilities), 7) NAA test results, 8) HIV status, and 9) other medical risk factors.

- **Interview the source patient.** A chart review and case interview should be accomplished within 1 working day for persons with AFB smear-positive respiratory specimens or cavitation on chest radiograph and within 3 days for all other persons ([165](#)). Source patients should be asked concerning TB symptom history, with a particular focus on duration of cough. Source patients also should be asked about where they conduct their daily activities. Persons with confirmed or suspected TB who were detained during the course of the infectious period should be interviewed regarding potential community contacts, particularly HIV-infected persons and young children; information regarding the location of community contacts also should be obtained. Source patients should be questioned regarding contacts during a second interview conducted 7--14 days after the first.
- **Define the infectious period.** Defining the infectious period for a source patient helps investigators determine how far back to go when investigating potential contacts. The infectious period is typically defined as 12 weeks before TB diagnosis or onset of cough (whichever is longer). If a patient has no TB symptoms, is AFB smear negative, and has a noncavitary chest radiograph, the presumed infectious period can be reduced to 4 weeks before the date of first positive finding consistent with TB. If the contact investigation reveals that TB transmission occurred throughout the identified infectious period, the period for contact investigation might need to be expanded beyond 12 weeks.
- **Convene the contact investigation team.** After TB is diagnosed, a team of professionals (e.g., infection-control, medical, nursing, custody, and local public health personnel) should be convened and charged with planning the contact investigation. A team leader should be identified and the roles and responsibilities of each team member defined, and a schedule of regular meetings (documented formally with written minutes) should be established. In addition, a communications plan and a plan for handling contact investigation data should be developed.
- **Update correctional management officials.** Administrative personnel should be kept apprised of the strategy, process, and action steps involved in conducting the contact investigation.
- **Obtain source case inmate traffic history.** The dates and locations of the source patient's housing during the infectious period and information regarding employment and education should be obtained. Groups of contacts should be prioritized according to duration of exposure and immune status.
- **Tour exposure sites.** A tour should be conducted of each place the source patient lived, worked, or went to school during the infectious period. In addition, information should be obtained regarding any correctional facility that has housed the source patient during the infectious period, including 1) the number of inmates who are housed together at one time, 2) the housing arrangement (e.g., cells versus dorms), 3) the general size of the air space, 4) the basics of the ventilation system (e.g., whether air is recirculated), 5) the pattern of daily inmate movement (e.g., when eating, working, and recreating), and 6) the availability of data on other inmates housed at the same time as the source patient. The assistance of a facility engineer often is necessary to help characterize the ventilation system and airflow direction within a correctional facility.
- **Prioritize contacts.** Contacts should be grouped according to duration and intensity of exposure. Persons with the most exposure and HIV-infected or other immunosuppressed contacts (regardless of duration of exposure) are considered highest priority. Because progression from exposure to death can be rapid among HIV-infected persons in a facility in which HIV-infected persons are housed or congregated separately, the entire group should be given high priority ([45](#)).
- **Develop contact lists.** Rosters of inmate and employee contacts from each location should be obtained and their current location investigated. Lists of exposed contacts should be generated and grouped according to current location (e.g., still incarcerated, released, and transferred).
- **Conduct a medical record review on each high-priority contact.** TST or QFT-G status, chest radiograph history, history of treatment for LTBI, HIV status, and other high-risk medical conditions should be recorded. Particular attention should be given to weight history and previous visits to facility health-care professionals for respiratory symptoms. Dates should be carefully recorded.
- **Evaluate HIV-infected contacts for TB disease and LTBI promptly.** LTBI therapy should be initiated promptly among these persons once TB disease has been excluded.
- **Place and read initial TSTs or perform QFT-Gs on eligible contacts.** Tuberculin skin or QFT-G testing of all previously TST- or QFT-G--negative inmate contacts should be conducted at baseline (unless previously tested within 1--3 months of exposure). Referrals should be made for persons who have been released or transferred before receiving their initial TST or QFT-G.

- **Make referrals for contact evaluation.** Referrals should be made to the local health department for inmate contacts of the source case who have been released or transferred to another facility. Additionally, family members or frequent visitors of the source patient should be investigated by the health department; follow-up TST or QFT-G results for a substantial percentage of contacts of released inmates have been obtained on re-arrest by matching the list of exposed contacts with the jail intake TST or QFT-G registry (21).
- **Calculate the infection rate and determine the need to expand the investigation.** To calculate the infection rate, the total number of inmates whose TST or QFT-G has converted from negative to positive should be divided by the total number with a TST placed and read or QFT-G performed. Persons with a history of a prior positive TST or QFT-G should be excluded. The infection rate should be calculated by exposure site. In addition, if using tuberculin skin testing, separately calculating the rate for U.S.- versus foreign-born inmates might provide useful data (33); foreign-born contacts often have a history of BCG vaccination, and a TST "conversion" among these contacts might represent a vaccination-associated "booster" TST response (168). The contact investigation team should analyze the infection rate(s) and decide whether to expand the investigation.
- **Place and read follow-up TSTs or perform follow-up QFT-Gs.** Follow-up TSTs or QFT-Gs for contacts who had a negative TST or QFT-G result on initial testing should be placed 8--10 weeks after exposure to the source patient has ended. Referrals should be made for persons who have been released or transferred and need a follow-up TST or QFT-G.
- **Determine the infection/transmission rate.** The infection rate from the second round of testing should be calculated. In addition, the need to expand the investigation should be determined.
- **Write a summary report.** The summary report should briefly describe the circumstances of the investigation, how it was conducted, the results of the investigation (e.g., the number of secondary cases identified and the infection and transmission rates), and any special interventions required (including follow-up plans). The report should be distributed to corrections administrators and the local health department.

Tuberculosis Training and Education of Correctional Workers and Inmates

TB training and education of correctional workers and other persons associated with any correctional facility (e.g., volunteers and inmates) can help lower the risk for TB transmission and disease. To ensure the effectiveness of such training and education, multiple factors should be considered. First, correctional facilities and local or state health departments should collaborate when providing TB training and education to correctional workers; specifically, facilities should routinely work with health department staff to provide them with corrections-specific training. Second, routine TB education should be provided for all persons who spend significant time in the facility, and additional training should be given to any employee who will interact with persons at risk for TB. The ideal amount of training time and information varies by the local risk for TB transmission and by the job descriptions and characteristics of those needing training. Finally, TB training and education efforts and other TB-related events should be documented to ensure that these programs can be evaluated and updated.

Training and Education in Correctional Facilities

Correctional workers, volunteers, inmates, and other persons spending significant time in correctional facilities should receive training and education regarding *M. tuberculosis* as part of in-facility, preservice training or orientation. Training should be provided at least annually thereafter.

In-facility training and education efforts can build on existing sources of TB-related preservice education and training. Regional and national professional associations frequently provide ongoing education regarding TB and infection control, and national correctional health-care conferences and courses for medical professionals working in correctional facilities regularly include TB in their curricula.

TB-associated training should be designed to meet the needs of correctional workers with diverse job descriptions. In multiple facilities and for multiple categories of correctional workers, appropriate TB training

might be accomplished through incorporation of the topic into other annual employee trainings (e.g., bloodborne pathogen training); more extensive or topic-specific training should be developed for persons who are specifically involved in TB control. Facilities that use inmates to provide peer-to-peer TB-education programs should provide similarly tailored training to any participating inmates. Facilities located in areas with a high TB prevalence or whose inmates have lived in such areas might need to increase the time and resources dedicated to TB training.

The correctional facility health services director or designee (i.e., the staff member responsible for a facility's TB control program) should collaborate with the local public health department to establish TB education and training activities. In addition, these staff members routinely should evaluate and update the facility's TB training and education program in collaboration with the public health sector. External changes in the prevalence of TB in the community, changes in state or local public health policies, or changes in national TB control guidelines might necessitate the conduct of regular educational updates for staff.

Each facility should maintain training records to monitor correctional worker training and education. Records of TB-related adverse events (e.g., documented in-facility transmission) also should be monitored as a means of evaluating training and education outcomes. The circumstances of adverse events should be investigated, and the possibility of enhanced or altered training should be considered as an appropriate intervention.

Initial Training and Education for all Correctional Workers

Although the level and detail of any employee's initial TB training and education session will vary according to staff members' job responsibilities, the following components should be included for all correctional workers, regardless of job function:

- communication regarding the basic concepts of *M. tuberculosis* transmission, signs, symptoms, diagnosis (including the difference between LTBI and TB disease), and prevention;
- provision of basic information regarding the importance of following up on inmates or correctional workers demonstrating signs or symptoms of TB disease;
- need for initiation of airborne precautions of inmates with suspected or confirmed TB disease;
- review of the policies and indications for discontinuing AII precautions;
- discussion of basic principles of treatment for TB disease and LTBI; and
- discussion regarding TB disease in immunocompromised persons.^{§§}

Required Training for Correctional Workers in Facilities with AII Rooms

Correctional workers in facilities equipped with AII rooms also should be provided clear guidelines regarding the identification and containment of persons with TB disease. Education efforts for these staff members should include 1) discussion of the use of administrative and engineering controls and personal protective equipment and 2) a respiratory protection program (including annual training) as mandated by OSHA (Standard 29 CFR OSHA/DOL [87]).

Enhanced Training and Education for Correctional Workers in High-Risk Facilities

Correctional workers in facilities with a high risk for TB transmission should receive enhanced and more frequent training and education concerning

- the signs and symptoms of TB disease,
- transmission of TB disease, and
- TB infection-control policies (including instruction on and location of the facility's written infection-control policies and procedures, exposure control plan, and respiratory protection program).

If a contact investigation is being conducted because of suspected or confirmed infectious TB, the health department or designated health provider should educate facility correctional workers in all aspects of the investigation. Education should include information concerning

- contact investigation guidelines ([165](#)),
- TB transmission,
- the method used to determine a contact's risk for infection and prioritization for evaluation and treatment,
- the noninfectiousness of inmates and correctional workers with LTBI,
- the noninfectiousness of persons with TB disease who have responded to therapy and have submitted three AFB negative sputum-smear results, and
- patient confidentiality issues.

Facility staff members who are responsible for TB-control activities should stay informed regarding current TB trends and treatment options. Conference attendance, participation in professional programs, and other off-site training are effective supplemental training strategies for correctional worker trainers and facility medical and infection-control staff.

Training and Education of Public Health Department Staff

State and local health department staff providing consultation or direct services to a correctional facility (including those who act as liaisons) should receive training and education regarding the unique aspects of health care and TB control in the correctional facility setting. Correctional facility administrators, contracted correctional facility health-care professionals, and health department staff should collaborate to develop an appropriate training program. The use of self-study and other educational materials should be encouraged as a supplement to training. Certain TB training resources also can be accessed on the Internet (Appendix A). Education and training of health department staff should cover (but not be limited to) the following topics:

- TB-related roles of correctional facility and health department staff;
- methods of effectively collaborating with correctional facilities;
- differences between and among jails, prisons, and other forms of detention facilities;
- correctional culture and the importance of respecting the mission and purpose (i.e., custody) of correctional facilities and correctional workers;
- the health department's role in the discharge of inmates (see Discharge Planning); and
- the effect of the custody and movement of foreign detainees on local facilities.

Training and Education of Inmates

Inmates should receive education from facility health-care professionals or other appropriately trained workers managing the screening or treatment process. Education and training should be appropriate in terms of the education level and language of the trainees. The following components should be incorporated into inmate training and education programs:

- general TB information (provided either at the time of admission or when being screened for TB);
- the meaning of a positive TST or QFT-G result and treatment options for LTBI;
- comprehensive TB education, including the infectiousness of and treatment for inmates being confined with suspected or confirmed TB disease; and
- the importance of completing treatment for inmates with LTBI or TB disease.

Program Evaluation

Six steps should be followed to ensure successful monitoring and evaluation of a TB-prevention and -control program:

- identifying collaborators,

- describing the TB-control program,
- focusing the evaluation to assess TB risk and performance,
- collecting and organizing data,
- analyzing data and forming conclusions, and
- using the information to improve the TB program ([169](#)).

The purpose of program evaluation is to improve accountability, enable ongoing learning and problem-solving, and identify opportunities for improvement. The evaluation process should be designed to provide information relevant to the stakeholders. Measures should be simple and the communication of results meaningful.

Identifying Collaborators

TB control requires the collaboration of correctional systems, health departments, and other community agencies; effective program evaluation also involves teamwork. Early engagement of program staff and internal and external collaborators (including custody staff) helps ensure that the evaluation will yield the information that is most useful to stakeholders. Such engagement also promotes mutual cooperation for constructive change. Although multiple parties might be involved, each TB program should have a single person designated to be responsible for data quality and program evaluation. Designating staff for these activities helps ensure that continuity and accountability are maintained.

Describing the Program

Underlying a useful evaluation is an understanding of how the TB program currently operates within the context of the facility. Evaluators should be knowledgeable about program goals and objectives, strategies, expected program-associated results, and the way in which the program fits into the larger organization and community. This information can typically be obtained by reviewing a facility's existing TB-control plan. In addition, all stakeholders should agree on program goals before the evaluation is undertaken ([169](#)).

Focusing the Evaluation to Assess TB Risk and Performance

Risk Assessment

Each facility should assess its level of TB risk at least annually ([71](#)). The TB risk assessment (see Screening) determines the types and levels of administrative and environmental controls needed. Assessment of a facility's risk level includes analysis of disease burden and facility transmission, which can be conducted by examining the following indicators:

- Burden of disease
 - community rates of TB disease (including other communities from which substantial numbers of inmates come; these data are available from local health departments),
 - the number of cases of TB disease in the facility during the preceding year, and
 - the number and percentage of inmates and staff with LTBI; and
- Facility transmission
 - the number and percentage of staff and inmates whose tests for TB infection converted and the reasons for the conversion,
 - the number of TB exposure incidents (see Contact Investigation), and
 - evidence of person-to-person transmission.

Conversion rates (as determined by annual testing) for staff and inmates should be determined and tracked over time to monitor for unsuspected transmission in the facility. In larger facilities, conversion rates for staff assigned to areas that might place them at higher risk for TB (e.g., booking and holding areas, day rooms, libraries, enclosed recreation areas, medical and dental areas, and transport vehicles) should be calculated and tracked. Staff should analyze contributing factors to TB exposure and transmission and plan for corrective

intervention, as appropriate. The following performance measures should be considered when determining risk within all correctional facilities, including those that function as a contract facility within a larger correctional system:

- the timeliness with which patients with suspected TB disease are detected, isolated, and evaluated (see Performance Measurement for Improving Quality); and
- other factors (e.g., the total number of patients with TB housed in the facility and the number of persons housed in the facility who are risk for TB) that will help determine the controls needed ([71](#)).

Performance Measurement for Improving Quality

The risk-assessment process enables the monitoring of risk for TB transmission (the key program indicator) and helps guide the focus and intensity of ongoing performance measurement and monitoring. Facilities at higher risk (e.g., those with cases of TB disease) benefit more from broader investigation of performance than facilities at lower risk. Risk-assessment findings should help guide the development of simple process performance measures for each pertinent area of TB prevention and control. These performance measures can then be used to monitor program implementation and intermediate outcomes. Treatment completion and continuity of care are key performance indicators. Each facility should have goals against which to measure performance in these areas (e.g., 100% of patients with TB disease will have documented treatment completion or, in the case of release or transfer, continuity of treatment on release). For LTBI, goals might be that 100% of patients released during treatment will have a documented referral for continuity of care in the community and that 90% of these patients will follow-up on their referral. The following are examples of possible performance measures that can be useful as part of a TB program evaluation, depending on the level of risk:

- Timeliness of screening and isolation
 - time from inmate admission to testing for TB infection,
 - time from TB testing to obtaining test results,
 - time from positive TB infection test results to obtaining a chest radiograph,
 - time from identification of a suspect TB patient (either through symptoms or abnormal chest radiograph) to placement in an AII room,
 - time from sputum collection to receipt of results, and
 - time from suspicious result (either via radiograph, smear-positive result, or smear-negative/culture-positive result) to initiation of contact investigation;
- Treatment
 - the number and percentage of patients with LTBI who initiated treatment and the percentage of persons who completed the prescribed treatment for LTBI (excluding those released from or transferred out of the facility),
 - the number and percentage of persons in whom TB disease was diagnosed who completed the prescribed treatment regimen (excluding those released from or transferred out of the facility), and
 - the reasons for treatment interruption among persons who stop therapy; and
- Continuity of care^{¶¶}
 - the number and percentage of patients released before completing treatment for TB disease or LTBI who had documented community appointments (or referrals) for continuity of care, and
 - the number and percentage of patients with confirmed and suspected TB disease who kept their first medical appointment in the community.

Other pertinent performance measures for correctional facilities might include the adherence rates among inmates and staff who should undergo TB testing, the percentage of staff receiving TB education and training annually, and the percentage of inmates receiving TB education.

Assessment of Collaboration

On an annual basis, each program also should evaluate its success in working collaboratively with local and state public health departments in each area of TB control (e.g., screening, containment, and assessment). Correctional systems should meet with their respective public health departments each year to assess risk,

update TB policies and procedures, and assess compliance regarding environmental control and respiratory protection recommendations (see Environmental Controls and Respiratory Protection). Correctional systems also should assess collaboration with other agencies to which the inmates are released.

Collecting and Organizing Data

Data Sources

As part of quality assessment, all facilities that house persons with confirmed or suspected TB disease should conduct periodic reviews of medical records for these patients and for a sample of patients with LTBI. In collaboration with the public health department, the review should be conducted at least annually in facilities with any confirmed or suspected cases of TB (including low-risk facilities) and quarterly in higher-risk facilities with numerous cases. The record review should compare actual performance against time standards, protocols, and goals for TB activities and outcomes (see Performance Measures for Improving Quality). Multiple tools are available for data collection (Appendix B) (*131*).

Medical records should contain information regarding TB history and risk factors, treatment, and all other interventions and dates to enable performance to be monitored. Other sources of data include log books, interviews with staff, and observations. Quality controls for TST placement and reading should be checked at least annually. The quality of the data used for calculating performance also should be verified.

Information Infrastructure

Effective program monitoring and evaluation is made possible through the reliable collection of valid data and through analysis of these data. Health-care professionals responsible for the prevention and control of TB within a correctional facility should have access to complete medical records and a database of essential TB-related activity and measurements. A retrievable aggregate record system is essential for tracking all inmates and for assessing the status of persons who have TB disease and LTBI, particularly in large jail and prison systems in which inmates are transferred frequently from one facility or unit to another. This record system should maintain at minimum current information about the location, screening results, treatment status, and degree of infectiousness of these persons. In addition to facilitating case management, such a record system provides facilities with the information necessary for conducting annual TB risk assessments, monitoring TB trends, measuring performance, and assessing the effectiveness of overall TB control efforts. Information contained in health records should always be kept confidential; all staff members involved in program evaluation should receive training to maintain the confidentiality of patient information.

Although medical databases can be maintained manually, electronic databases provide additional benefits by enabling a facility to 1) better track inmates for testing and case management, 2) access information regarding tests for TB infection, 3) share medical information regarding transferred inmates with other facilities, 4) link with the local health department, and 5) measure the effectiveness of TB-control efforts.

Analyzing Data and Drawing Conclusions

In a multifacility correctional system, evaluation data should be compiled for each facility separately and in aggregate. Data should be analyzed against standards, which can be defined externally (e.g., by national organizations or CDC-defined standards) or internally as established by the program collaborators (*170*). Once analyzed, conclusions should be drawn from the data and recommendations for program improvement developed. The evaluation and recommendations should be shared with program staff, administrators, and partners, including the local public health department.

Using Information to Improve the TB Program

The final step in the evaluation process is to implement the recommendations to improve the TB program. Program staff should use data to identify and remove barriers to improving performance, and administrators should make necessary revisions to policies or procedures.

Because the evaluation process is cyclical, assessing whether recommendations have been implemented and whether outcomes are improved is crucial. Existing data can be used to clearly demonstrate the effects of implemented interventions.

Collaboration and Responsibilities

The management of TB from the time an inmate is suspected of having the disease until treatment is complete presents multiple opportunities for collaboration between correctional facilities and the public health department. For example, public health agencies can partner with correctional facilities in TB screening and treatment activities. In a study of 20 urban jail systems and their respective public health departments, only 35% reported having collaborated effectively when conducting TB-prevention and -control activities (38). Formal organizational mechanisms (e.g., designated liaisons, regular meetings, health department TB program staff providing on-site services, and written agreements) are associated with more effective collaboration between correctional facilities and health departments (37).

Correctional facilities and health departments should each designate liaisons for TB-associated efforts. Liaisons should serve as a familiar and accessible communication link between collaborating entities. The duty of liaison at the correctional facility should be assigned to the person responsible for TB control or to another staff member familiar with TB control and patient management at the facility. Regular meetings between correctional facilities and health departments are important to establish communication and collaboration on TB-related issues (37,171). Jurisdictions with regularly scheduled meetings between jails and public health staff are 13 times more likely to report having highly effective collaboration than jurisdictions that have not established such meetings (37). For example, in Florida, the state TB-control program and corrections health officials hold quarterly coordination meetings on TB issues and regularly scheduled collaborative TB case-review conferences (171), activities that have encouraged communication between facilities and local health departments.

The presence of health department staff in correctional facilities can help promote more effective collaboration (37,171). Functions provided by such personnel within the correctional facility setting include screening, surveillance, education and training, contact investigation, and follow-up after release (171). For example, New York City Department of Health and Mental Hygiene personnel assigned to the Rikers Island jail interview inmates, monitor their care, suggest interventions or changes, and work with the jail to determine discharge planning needs for continuity of care in the community. Data access links are available on site that enable health department personnel to promptly inform corrections staff regarding previous completed therapy, incomplete work-up or therapy, sputum-smear results, culture and drug-susceptibility data, and ongoing treatment for TB cases and suspects. These on-site access links diminish the time spent in AII rooms and decrease the time required for patient work-up by providing confirmatory historical documentation.

Correctional facilities and health departments should work together to agree on and delineate their respective roles and responsibilities. Establishing clear roles and responsibilities helps avoid duplication, confusion, the potential for breaching patient confidentiality, excess expenditures, and missed opportunities.

Roles and responsibilities should be clearly defined for all TB-control activities that might require collaboration between correctional facilities and health departments, including

- screening and treatment of inmates for LTBI and TB disease,
- reporting of TB disease,
- follow-up of inmates with symptoms or abnormal chest radiographs,
- medical consultation regarding persons with confirmed and suspected TB disease,
- contact investigations for reported TB cases,

- continuity of treatment and discharge planning for persons with TB disease and LTBI,
- training and education of correctional facility staff,
- evaluation of screening and case management, and
- facility risk assessment.

Agreements about roles and responsibilities may be formal or informal, but they should be recorded in writing. Formal agreements include memoranda of understanding and written policies or plans. Informal agreements may be as simple as an e-mail summary of a verbal discussion or meeting. The format for recording and communicating agreements (e.g., checklists, flow charts, algorithms, and lists of steps) may vary depending on the need. Once agreements are made, they should be reassessed periodically (see Program Evaluation).

Correctional facilities and health departments should work together to formulate agreements that specify the information to be shared in a particular time frame, who will have access to specific information or databases, and how patient confidentiality will be protected. Information systems provide the framework for recording and accessing pertinent information (see Program Evaluation). Health departments should provide correctional facilities with pertinent TB surveillance information (e.g., local rates of drug resistance, the number of TB cases occurring in correctional facilities relative to the community, and the number of TB cases identified in the community among recently incarcerated persons), which can bolster support for TB-screening activities within these facilities.

Legislation or policy statements can effectively encourage or mandate collaboration on issues (e.g., disease reporting, contact investigation, and discharge planning) when institutional barriers (e.g., time and resources) inhibit collaboration. For example, California has improved discharge planning by prohibiting the release or transfer of inmates with confirmed or suspected TB unless a written treatment plan has been received and accepted by the local health officer (172). Arizona's state administrative code places responsibility for contact investigations of TB exposures in correctional facilities on the correctional facility but requires consultation with (and reporting to) the local health department. ICE also has developed a policy memorandum requesting that ICE field office directors grant a short-term hold on the deportation of patients with TB disease to allow time for the ICE health services program to facilitate continuity of care.

Summary of Recommendations

Screening

Early identification and successful treatment of persons with TB disease remains the most effective means of preventing disease transmission. Inmates who are likely to have infectious TB should be identified and begin treatment before they are released into the general population. Screening programs in the correctional setting also allow for the detection of substantial numbers of persons with LTBI who are at high risk for TB disease and would likely benefit from a course of treatment.

The type of screening recommended for a particular correctional facility is determined by an assessment of the risk for TB transmission within that facility. The risk assessment should be performed annually and should be conducted in collaboration with the local or state health department. A facility's TB risk level can be defined as minimal or nonminimal. A facility should be classified as having minimal TB risk on the basis of four criteria:

- No cases of infectious TB have occurred in the facility in the last year.
- The facility does not house substantial numbers of inmates with risk factors for TB (e.g., HIV infection and injection-drug use).
- The facility does not house substantial numbers of new immigrants (i.e., persons arriving in the United States within the previous 5 years) from areas of the world with high rates of TB.
- Employees of the facility are not otherwise at risk for TB.

Any facility that does not meet all of these criteria should be categorized as being a nonminimal TB risk facility.

Inmates in all minimal TB risk correctional and detention facilities require an evaluation at entry for symptoms of TB. Persons with symptoms of TB require an immediate evaluation to rule out the presence of infectious disease and must be kept in an AII room until they are evaluated. All newly arrived inmates should be evaluated for clinical conditions and other factors that increase the risk for TB disease. Persons who have any of these conditions require further screening with a TST, a QFT-G, or a chest radiograph within 7 days of arrival. Regardless of TST or QFT-G result, inmates known to have HIV infection or other severe immunosuppression, as well as inmates who are at risk for HIV infection but whose HIV status is unknown, should have a chest radiograph taken as part of the initial screening. Persons who have an abnormal chest radiograph should be evaluated further to rule out TB disease; if TB disease is excluded as a diagnosis, LTBI therapy should be considered if the TST or QFT-G is positive.

In nonminimal TB risk prisons, symptom screening assessment should be performed immediately for all new inmates. Any inmate who has symptoms suggestive of TB should be placed in an AII room and evaluated promptly for TB disease. Inmates who have no symptoms require further screening with a TST, a QFT-G, or a chest radiograph within 7 days of arrival. Regardless of their TST or QFT-G status, inmates known to have HIV infection or other severe immunosuppression, and inmates who are at risk for HIV infection but whose HIV status is unknown, should have a chest radiograph taken as part of the initial screening. Persons who have an abnormal chest radiograph should be evaluated further to rule out TB disease; if TB disease is excluded as a diagnosis, LTBI therapy should be considered if the TST or QFT-G result is positive.

Symptom screening should be performed immediately on entry for all new detainees in nonminimal TB risk jails. Any detainee who has symptoms suggestive of TB should be placed in an AII room and promptly evaluated for TB disease. Detainees who are without symptoms require further screening with a TST, a QFT-G, or a chest radiograph within 7 days of arrival. Regardless of TST or QFT-G result, detainees known to have HIV infection, and detainees who are at risk for HIV infection but whose HIV status is unknown, should have a chest radiograph taken as part of the initial screening. Persons who have a positive result should be further evaluated to rule out TB disease. Screening in jails with the TST or QFT-G for purposes of initiating LTBI therapy often is not practical because of the high rate of turnover and short lengths of stay.

A medical history relating to TB should be obtained from and recorded for all new employees at the time of hiring, and a physical examination for TB disease should be required. In addition, TST or QFT-G screening should be mandatory for all employees who do not have a documented positive result. Persons who have a positive TST or QFT-G result should have a chest radiograph taken and interpreted and should be required to have a thorough medical evaluation; if TB disease is excluded as a diagnosis, such persons should be considered for LTBI therapy. All employees should be informed and instructed to seek appropriate follow-up and screening for TB if they are immunosuppressed for any reason (e.g., HIV infection, organ transplant recipient receiving immunosuppressive therapy, and treatment with TNF- α antagonist). Any employee who has symptoms suggestive of TB should not return to the workplace until a clinician has excluded a diagnosis of contagious TB disease.

In general, long-term inmates and all employees who have a negative baseline TST or QFT-G result should have follow-up testing at least annually. Persons who have a history of a positive test result should be screened annually for symptoms of TB disease. Annual chest radiographs are unnecessary for the follow-up evaluation of infected persons. Test results should be recorded in medical records and in a retrievable aggregate database of all TST or QFT-G results.

Case Reporting

Correctional facility medical staff must report any suspected or confirmed TB cases among inmates or employees to the appropriate health agency in accordance with state and local laws and regulations, even if the inmate or detainee has already been released or transferred from the facility. Reporting cases to health departments benefits the correctional facility by allowing it to obtain health department resources for case management and contact investigation in both the facility and the community. In addition, drug-susceptibility results should be used to inform optimal therapy and sent to the state or local health department for use in

monitoring the rates of drug resistance. The drug-susceptibility reports also should be sent to all health departments managing contacts of the TB case because the choice of medication for LTBI treatment is based on drug-susceptibility test results of the source case. Reports to local or state health departments should identify the agency that has custodial responsibility for the inmate.

Airborne Infection Isolation

TB airborne precautions should be initiated for any patient who 1) has signs or symptoms of TB disease or 2) has documented TB disease and has not completed treatment or not previously been determined to be non-infectious. For patients placed in an AII room because of suspected infectious TB disease of the lungs, airways, or larynx, airborne precautions can be discontinued when infectious TB disease is considered unlikely and either 1) another diagnosis is made that explains the clinical syndrome or 2) the patient has three negative AFB sputum-smear results. Incarcerated patients in whom the suspicion of TB disease remains after the collection of three negative AFB sputum-smear results should not be released from an AII room until they are on standard multidrug anti-TB treatment and are clinically improving. A patient who has drug-susceptible TB of the lung, airways, or larynx; who is on standard multidrug anti-TB treatment; and who has had a clinical and bacteriologic response to therapy is probably no longer infectious. However, because culture and drug-susceptibility results typically are not known when the decision to discontinue airborne precautions is made, all patients in whom the probability of TB disease is high should remain in an AII room while incarcerated until they have 1) had three consecutive negative AFB sputum smear results, 2) received standard multidrug anti-TB treatment, and 3) demonstrated clinical improvement.

Environmental Controls

Environmental controls should be implemented when the risk for TB transmission persists despite efforts to screen and treat infected inmates. Environmental controls are used to remove, inactivate, or kill *M. tuberculosis* in areas in which the organism could be transmitted. Primary environmental controls consist of controlling the source of infection by using local exhaust ventilation (e.g., hoods, tents, or booths) and diluting and removing contaminated air using general ventilation. Secondary environmental controls consist of controlling the airflow to prevent contamination of air in areas adjacent to the source (AII rooms) and cleaning the air using HEPA filtration and/or UVGI. The efficiency of different primary or secondary environmental controls varies. A detailed discussion concerning the application of environmental controls has been published previously([71](#)).

Personal Respiratory Protection

Respiratory protection is used when administrative (i.e., identification and isolation of infectious TB patients) and environmental controls alone have not reduced the risk for infection with *M. tuberculosis* to an acceptable level. The use of respiratory protection might be most appropriate in specific settings and situations within correctional facilities; for example, protection is warranted for inmates and facility staff when they enter AII rooms, transport infectious inmates in an enclosed vehicle, and perform or participate in cough-inducing procedures. In correctional facilities, a CDC/NIOSH-approved N95 air-purifying respirator will provide adequate respiratory protection in the majority of situations that require the use of respirators.

All correctional facility staff members who use respirators for protection against infection with *M. tuberculosis* must participate in the facility's respiratory protection program (e.g., understand their responsibilities, receive training, receive medical clearance, and engage in fit testing). All facilities should develop, implement, and maintain a respiratory-protection program for health-care workers or other staff who use respiratory protection. (Respiratory-protection programs are required for facilities covered by OSHA.) In addition to staff members, visitors to inmates with TB disease should be given respirators to wear while in AII rooms and instructed how to ensure their own respiratory protection by checking their respirator for a proper seal. Each facility, regardless of TB risk classification (i.e., minimal or nonminimal), should develop a policy on the use of respirators by visitors of patients.

Diagnosis and Treatment of LTBI and TB Disease

A diagnosis of TB disease should be considered for any patient who has a persistent cough (≥ 3 weeks) or other signs or symptoms compatible with TB disease (e.g., bloody sputum [hemoptysis], night sweats, weight loss, anorexia, and fever). Diagnostic tests for TB include the TST, QFT-G, chest radiography, and laboratory examination of sputum samples or other body tissues and fluids. Persons exposed to inmates with TB disease might become infected with LTBI, depending on host immunity and the degree and duration of exposure. Therefore, the treatment of persons with TB disease plays a key role in TB control by stopping transmission and preventing potentially infectious cases from developing. LTBI is an asymptomatic condition that can be diagnosed by the TST or QFT-G.

Regardless of age, correctional facility staff and inmates in the following high-risk groups should be given treatment for LTBI if their reaction to the TST is ≥ 5 mm:

- HIV-infected persons,
- recent contacts of a TB patient,
- persons with fibrotic changes on chest radiograph consistent with previous TB disease, and
- patients with organ transplants and other immunocompromising conditions who receive the equivalent of ≥ 15 mg/day of prednisone for ≥ 1 month.

All other correctional facility staff and inmates should be considered for treatment of LTBI if their TST result is ≥ 10 mm induration. The preferred treatment for LTBI is 9 months of daily isoniazid or biweekly dosing administered by DOT. Although LTBI treatment regimens are broadly applicable, modifications should be considered for certain populations (e.g., patients with HIV infection) and when drug resistance is suspected.

Individualized case management should be provided for all patients with TB disease. In addition, patient management should be coordinated with officials of the local or state health department. Regimens for treating TB disease must contain multiple drugs to which the organisms are susceptible. For the majority of patients, the preferred regimen for treating TB disease consists of an initial 2-month phase of isoniazid, rifampin, pyrazinamide, and ethambutol, followed by a continuation phase of isoniazid and rifampin lasting ≥ 4 months, for a minimum total treatment period of 6 months. The decision to stop therapy should be based on the number of doses taken within a maximum period (not simply a 6-month period). Persons with cavitary pulmonary TB disease and positive cultures of sputum specimens at the completion of 2 months of therapy should receive a longer, 7-month continuation phase of therapy (total duration: 9 months) because of the substantially higher rate of relapse among persons with this type of TB disease.

Drug-susceptibility testing should be performed on all initial *M. tuberculosis* isolates from patients with TB disease. When results from drug-susceptibility tests become available, the treatment regimen should be adjusted accordingly. Medical providers treating patients with drug-resistant TB disease should seek expert consultation and collaborate with the local health department for treatment decisions.

TB treatment regimens might need to be altered for HIV-infected persons who are receiving antiretroviral therapy. Whenever possible, the care of persons with concomitant TB and HIV should be provided by or in consultation with experts in the management of both TB and HIV-related disease.

The primary determinant of treatment outcome is patient adherence to the drug regimen. Thus, careful attention should be paid to measures designed to enable and foster adherence. DOT is the preferred treatment strategy for all persons with TB disease and high-risk (e.g., HIV infected) persons with LTBI. DOT should be used throughout the entire course of therapy whenever feasible. Practitioners providing treatment to inmates should coordinate DOT with the local health department on an inmate's release. The local health department also may be involved in monitoring therapy for correctional facility staff.

Discharge Planning

Postrelease follow-up is a necessary component of TB control efforts. Effective discharge planning requires collaboration between corrections and medical staff (both intra- and interfacility), as well as with public health and community-based service organizations.

To ensure uninterrupted treatment, discharge planning for inmates in whom TB disease is diagnosed must begin as soon as possible after diagnosis. Corrections or health service administrators (or their designees) should assign staff to notify the public health department of inmates receiving treatment for TB disease or LTBI. Inmates with TB disease should be interviewed while still incarcerated (ideally by public health staff) to enable facility administrators to assess and plan for the appropriate support and referrals that will be needed after discharge.

All correctional facilities should assign personnel (preferably health-care professionals) to serve as case managers. These managers should be responsible for conducting discharge planning in the facility, which entails coordinating follow-up and communicating treatment histories with public health department and other health-care counterparts within the community.

Contact Investigation

The overall goal of a TB contact investigation is to interrupt transmission of *M. tuberculosis*. Ongoing transmission is prevented by 1) identifying, isolating, and treating other persons with TB disease (e.g., secondary patients) and 2) identifying infected contacts of the source and secondary patients and providing them with a complete course of treatment for LTBI.

Because decisions involved in planning and prioritizing contact investigations in correctional facilities are seldom simple, the process benefits from the input of a larger, multi-disciplinary team when possible. The best preparation for contact investigations in correctional facilities is ongoing, formal collaboration between correctional and public health officials.

The decision to initiate a contact investigation for an inmate or detainee with possible TB is made on a case-by-case basis. In general, contact investigations should be conducted in the following circumstances: 1) suspected or confirmed pulmonary, laryngeal, or pleural TB and cavitary disease on chest radiograph or positive AFB smear results (sputum or other respiratory specimens) or 2) suspected or confirmed pulmonary (noncavitary) or pleural TB and negative AFB smear results (sputum or other respiratory specimens) and a decision has been made to initiate TB treatment. A more limited initial investigation may be conducted for smear-negative cases.

Contact investigation should be conducted in a stepwise fashion that includes 1) notifying correctional management officials; 2) conducting a chart review of the source patient; 3) interviewing the source patient; 4) defining the infectious period; 5) convening the contact investigation team; 6) updating correctional management officials about the strategy, process, and action steps involved in conducting the contact investigation; 7) obtaining source case inmate traffic history (i.e., the dates and locations of the TB source patient's housing during the infectious period); 8) touring exposure sites; 9) prioritizing contacts according to duration and intensity of exposure and risk factors for becoming infected with TB and progressing to TB disease; 10) developing contact lists; 11) conducting a medical record review on each high-priority contact; 12) evaluating HIV-infected contacts promptly; 13) placing and reading initial TSTs or QFT-Gs on eligible contacts; 14) making referrals for contact evaluation (e.g., referrals to the local health department for contacts of inmates who have been released or transferred to another facility, family members, frequent visitors of the source patient); 15) calculating the infection rate and determining the need to expand the investigation; 16) placing and reading follow-up TSTs or QFT-Gs; 17) determining the infection/transmission rate from the second round of testing; and 18) writing a summary report.

Training and Education

Although the level and detail of any employee's initial TB training and education session will vary according to staff members' job responsibilities, the following components should be included for all correctional workers,

regardless of job function: 1) communication regarding the basic concepts of *M. tuberculosis* transmission, signs, symptoms, diagnosis (including the difference between LTBI and TB disease), and prevention; 2) provision of basic information regarding the importance of following up on inmates or correctional workers demonstrating signs or symptoms of TB disease; 3) explanation of the need for initiation of AII of inmates with suspected or confirmed TB disease; 4) review of the policies and indications for discontinuing AII precautions; 5) discussion of basic principles of treatment for TB disease and LTBI; and 6) discussion regarding TB disease in immunocompromised persons.

Correctional workers in facilities with a high risk of TB transmission should receive enhanced and more frequent training and education regarding 1) the signs and symptoms of TB disease, 2) transmission of TB disease, and 3) infection-control policies (including instruction on and location of written infection-control policies and procedures, the facility's exposure control plan, and the respiratory protection program).

State and local health department staff providing consultation or direct services to a correctional facility (including those who act as liaisons) should receive training and education regarding the unique aspects of health care and TB control in the correctional facility setting. Correctional facility administrators, contracted correctional facility health-care professionals, and health department staff should collaborate to develop an appropriate training program. Inmates should receive education from facility health-care professionals or other appropriately trained workers managing the screening or treatment process. Education and training should be appropriate in terms of the education level and language of the trainees.

Program Evaluation

Program evaluation should be performed based on the CDC framework. Successful monitoring and evaluation of a TB-prevention and -control program includes identifying collaborators, describing the TB-control program, focusing the evaluation to assess TB risk and performance, collecting and organizing data, analyzing data and forming conclusions, and using the information to improve the TB program.

Collaboration and Responsibilities

The management of TB from the time an inmate is suspected of having the disease until treatment is complete presents multiple opportunities for collaboration between correctional facilities and the public health department. Formal organizational mechanisms (e.g., designated liaisons, regular meetings, health department TB-program staff providing on-site services, and written agreements) have been demonstrated to be associated with more effective collaboration between correctional facilities and health departments.

Correctional facilities and health departments should each designate liaisons for TB-associated efforts. Liaisons should serve as a familiar and accessible communication link between collaborating entities. The duty of liaison at the correctional facility should be assigned to the person responsible for TB control or to another staff member familiar with TB control and patient management at the facility.

Correctional facilities and health departments should work together to agree on and delineate their respective roles and responsibilities. Establishing clear roles and responsibilities helps avoid duplication, confusion, the potential for breaching patient confidentiality, excess expenditures, and missed opportunities. Agreements about roles and responsibilities may be formal or informal, but they should be recorded in writing to avoid misunderstandings and to give the agreement longevity beyond personal relationships.

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* The epidemiology of TB in the United States has changed dramatically since the early 1990s. Immigration from countries with a high prevalence of TB contributes substantially to the continued high rates of disease and transmission among foreign-born persons. In 2003, the rate of TB among foreign-born persons in the United States was 8.7 times higher than the rate for persons born in the United States. More than half of new TB cases in 2003 occurred in foreign-born persons, particularly those from Mexico, the Philippines, and Vietnam. Of 114 patients in whom multi-drug resistant TB (MDR TB) were diagnosed, foreign-born persons accounted for 95 (83%) cases (6). Detention facilities and local jails frequently contract with U.S. Immigration and Customs Enforcement (ICE) to house detainees, a practice that should be accounted for in assessing a facility's risk status.

† Therapy that involves providing the anti-TB drugs directly to the patient and watching as the patient swallows the medications. DOT is the preferred core management strategy for all patients with TB. DOT for LTBI is referred to sometimes as directly observed preventive therapy.

§ Formerly called a negative pressure isolation room, an AII room is a single-occupancy patient-care room used to isolate persons with suspected or confirmed infectious TB disease. Environmental factors are controlled in AII rooms to minimize the transmission of infectious agents that are usually spread from person to person by droplet nuclei associated with coughing or aerosolization of contaminated fluids. AII rooms should provide negative pressure in the room so clean air flows under the door gap into the room, an air flow rate of 6–12 air changes per hour (ACH), and direct exhaust of air from the room to the outside of the building or recirculation of air through a high efficiency particulate air (HEPA) filter.

¶ ACH is the ratio of the volume of air entering the room or booth per hour to the volume of that room or booth. It equals the exhaust airflow (Q) in cubic feet per minute (cfm) divided by the volume of the room or booth (V) in cubic feet (ft³) multiplied by 60 minutes per hour, as expressed thus:

$$ACH = \left(\frac{Q}{V} \right) \times 60.$$

** Surgical masks should never be worn in place of a respirator. Surgical masks often fit so poorly that they provide only minimal protection from any airborne hazard, including *M. tuberculosis*. Surgical masks are designed to protect others from the wearer; they are not designed or tested to provide respiratory protection to the wearer.

†† Asymptomatic contacts with normal chest radiographs typically do not require isolation.

§§ Because being immunocompromised (having pathologic or iatrogenic immune suppression, e.g., HIV infection or chemotherapy) is a risk factor for TB disease, correctional workers should be educated on the relation between TB and medical conditions associated with being immunocompromised. Correctional workers should be encouraged to discuss known or possible immunocompromising conditions with their private physicians or health-care professionals.

¶¶ Public health departments typically track treatment completion rates for patients referred to their care.

Table 1

TABLE 1. Air changes per hour (ACH) and time required for removal of airborne contaminants, by efficiency percentage*

ACH	Minutes required for removal†	
	99.0% efficiency	99.9% efficiency
2	138	207
4	69	104
6	46	69
12	23	35
15	18	28
20	7	14
50	3	6

SOURCE: Modified from the formula for the rate of purging airborne contaminants (Mutchler JE. Principles of ventilation: the industrial environment—its evaluation and control. Washington, DC: US Department of Health and Human Services, Public Health Service, CDC, NIOSH; 1973:573–82).

* Values apply to a room or enclosure in which 1) the generation of aerosols has ceased (e.g., the infectious inmate is no longer present in the room) or 2) the aerosol procedure has been completed, and the room or booth is no longer occupied. The times provided assume perfect mixing of the air in the space; removal times will be longer in rooms or areas with imperfect mixing or air stagnation. Caution should be exercised in applying the table to such situations, and expertise from a qualified engineer or industrial hygienist should be obtained.

† Minutes required for removal of airborne contaminants from the time that generation of infectious droplet nuclei has ceased.

[Return to top.](#)

Table 2**TABLE 2. Ventilation recommendations for selected areas in new or renovated correctional facility settings**

Correctional Area	Minimum total ACH*	Air movement relative to adjacent areas	All air exhausted directly outdoors†
Cell or dormitory housing unit	6	In	No†
Airborne infection isolation (AII) cells	12	In	Yes
Anteroom to AII cell (if present)	10	Out/In§	Yes
Day rooms	6	Out¶	No†
Intake, holding, or processing area	12	In	Yes
Kitchen or food preparation area	6–10	In	Yes**
Laundry	10–12	In	Yes**
Jail ancillary (e.g., dining or visitation)	6	Out¶	No
Courtrooms	6	Out¶	No

SOURCE: Modified from American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. 2003 ASHRAE Handbook: HVAC applications, chapter 7, health-care facilities and chapter 8, justice facilities. Atlanta, GA: American Society of Heating, Refrigerating and Air-Conditioning Engineers; 2003.

* Air changes per hour. Outdoor air recommendations for AII rooms and other medical care or treatment areas should follow those published by CDC (CDC. Guidelines for preventing the transmission of *Mycobacterium tuberculosis* in health-care settings, 2005. MMWR 2005;54[RR-17]:1–140). For general population areas, outdoor air supply rates should meet or exceed those prescribed by ASHRAE (American National Standards Institute, American Society of Heating, Refrigerating and Air-Conditioning Engineers. ANSI/ASHRAE Standard 62.1-2004. Ventilation for acceptable indoor air quality. Atlanta, GA: American Society of Heating, Refrigerating and Air-Conditioning Engineers; 2004). For general population areas with a potential elevated tuberculosis risk, minimum outdoor air recommendations that exceed those in Standard 62.1 and are based on analogous areas in health-care facilities (e.g., using health-care criteria for emergency waiting rooms for correctional intake, holding, or processing areas) can also be applied.

† Single-pass ventilation that safely exhausts all air to the outdoors is the most protective ventilation design approach and should be incorporated within areas likely to contain infectious aerosols. For general population areas in which persons with unsuspected or undiagnosed infectious tuberculosis (TB) disease might be present, single-pass ventilation should be considered where and when environmental conditions are compatible. When direct exhaust to the outdoors is not feasible, the highest filtration efficiency that is compatible with the installed heating, ventilating, and air-conditioning system should be used. Supplemental methods (e.g., ultraviolet germicidal irradiation or portable air cleaners) may be combined with mechanical filtration in areas that do not have single-pass ventilation to increase effective air cleaning.

§ Anteroom pressurization should be designed to minimize cross-contamination between patient areas and surrounding areas and should comply with local fire smoke management regulations.

¶ This determination should be made on the basis of the risk assessment conducted at each facility, with consideration given to the compatibility with a single-pass ventilation design.

** Exhausting all air from kitchens and laundry rooms to the outdoors is recommended for contaminant (not TB) and odor control.

[Return to top.](#)

Table 3

TABLE 3. Criteria for evaluation of correctional facility staff and inmates with latent tuberculosis infection (LTBI) for tuberculosis (TB) disease, by test result

Purpose	TST* result	QFT-G† result
Baseline	≥10 mm§ (either first or second step)	Positive single-step test result
Serial testing (no known exposure)	Increase of ≥10 mm	Change from negative to positive
Known exposure (close contact)	≥5 mm in those with a baseline TST of 0 mm Increase of ≥10 mm in those with baseline or previous follow-up screening TST result of <10 mm	Change from negative to positive

* Tuberculin skin test.

† QuantiFERON®-TB Gold.

§ Except for persons in whom a 5 mm induration test (TST) result is considered positive: 1) persons infected with human immunodeficiency virus, 2) persons who are recent contacts of patients with TB disease, 3) persons with fibrotic changes on chest radiograph consistent with previous TB disease, 4) organ transplant recipients and patients with other immunocompromising conditions (e.g., persons receiving >15 mg/day of prednisone for >1 month), and 5) persons suspected of having TB disease.

[Return to top.](#)

Table 4

TABLE 4. QuantiFERON®-TB Gold (QFT-G) test results and interpretation

Laboratory interpretation	Clinical interpretation
Positive QFT-G test	<i>Mycobacterium tuberculosis</i> infection likely; medical evaluation indicated
Negative QFT-G test	<i>M. tuberculosis</i> infection unlikely but cannot be excluded, especially when illness is consistent with tuberculosis (TB) disease and likelihood of progression to TB disease is increased
Indeterminate QFT-G test	Not possible to determine likelihood of <i>M. tuberculosis</i> infection from blood sample supplied

[Return to top.](#)

Table 5

TABLE 5. Common drug regimens for treatment of latent tuberculosis infection (LTBI)*

Drugs	Duration (mos)	Interval	No. of doses	Rating (evidence) [†]	
				HIV– [§]	HIV+ [¶]
Isoniazid	9	Daily	270	A (II)	A (II)
		Twice wkly	78	B (II)	B (II)
Isoniazid	6	Daily	180	B (I)	C (I)
		Twice wkly	52	B (II)	C (I)
Rifampin**	4	Daily	120	B (II)	B (III)

* The combination of rifampin and pyrazinamide had been recommended for the treatment of LTBI (American Thoracic Society, CDC. Targeted tuberculin testing and treatment of latent tuberculosis infection. Am J Respir Crit Care Med 2000;161:S221–47). However, this regimen should generally not be offered (a D [III] recommendation) on the basis of subsequent reports of severe hepatotoxicity.

[†] Ratings are based on modification of the U.S. Public Health Service rating system (American Thoracic Society, CDC. Targeted tuberculin testing and treatment of latent tuberculosis infection. Am J Respir Crit Care Med 2000;161:S221–47. A = preferred; B = acceptable alternative; C = offer when A and B cannot be given. I = randomized clinical trial data; II = data from clinical trials that are not randomized or were conducted in other populations; III = expert opinion.

[§] Human immunodeficiency virus (HIV)–negative.

[¶] HIV-infected.

** Substitution of rifabutin for rifampin might be indicated in HIV-infected patients taking certain antiretroviral medications because drug-drug interaction might be less frequent when rifabutin is used.

[Return to top.](#)

Table 6**TABLE 6. Initial drug regimens for culture-positive pulmonary tuberculosis caused by drug-susceptible organisms**

Regimen	Drug	Interval	Dose	Minimum duration
1	Isoniazid Rifampin* Pyrazinamide Ethambutol [†]	Daily	56	8 wks
2	Isoniazid Rifampin* Pyrazinamide Ethambutol [†]	Daily, then twice wkly [§]	14 daily, then 12 twice wkly	2 wks daily, then 6 wks twice wkly
Other	See source cited below for less commonly used regimens.			

SOURCE: Modified from American Thoracic Society, CDC, Infectious Diseases Society of America. Treatment of tuberculosis. MMWR 2003; 52(No. RR-11):1–80.

* Substitution of rifabutin for rifampin might be indicated in human immunodeficiency virus (HIV)–infected patients taking certain antiretroviral medications because drug-drug interaction might be less frequent when rifabutin is used.

[†] May be discontinued if the infecting organism is confirmed to be susceptible to isoniazid and rifampin.

[§] Not recommended for HIV-infected patients with CD4+ T-lymphocyte cell counts of <100 cells/mm³. Additional information is available at http://www.cdc.gov/nchstp/tb/tb_hiv_drugs/toc.htm.

[Return to top.](#)

Table 7

TABLE 7. Continuation phase options for initial drug regimens 1 and 2

Regimen	Option	Drugs	Interval	Doses	Minimum duration*	Rating (evidence) [†]	
						HIV- [§]	HIV+ [¶]
1	a	Isoniazid Rifampin**	Daily	126	18 wks	A (I)	A (II)
1	b	Isoniazid Rifampin**	Twice wky ^{††}	36	18 wks	A (I)	A (II)
2	a	Isoniazid Rifampin**	Twice wky ^{††}	36	18 wks	A (II)	B (II)
Other	Refer to American Thoracic Society, CDC, Infectious Diseases Society of America. Treatment of tuberculosis. MMWR 2003;52 (No. RR-11):1-80 for less commonly used options.						

SOURCE: Modified from American Thoracic Society, CDC, Infectious Diseases Society of America. Treatment of tuberculosis. MMWR 2003;52(No. RR-11):1-80.

* Patients with cavitation on initial chest radiograph and positive cultures at completion of 2 months of therapy should receive a 7-month (31 wks; either 217 doses [daily] or 62 doses [twice wky]) continuation phase.

† Ratings are based on modification of the U.S. Public Health Service rating system (American Thoracic Society, CDC, Infectious Diseases Society of America. Treatment of tuberculosis. MMWR 2003;52(No. RR-11):1-80). A = preferred; B = acceptable alternative; C = offer when A and B cannot be given. I = randomized clinical trial data; II = data from clinical trials that are not randomized or were conducted in other populations; III = expert opinion.

§ HIV-negative.

¶ HIV-infected.

** Substitution of rifabutin for rifampin might be indicated in HIV-infected patients taking certain antiretroviral medications because drug-drug interaction may be less frequent.

†† Not recommended for HIV-infected patients with CD4+ T-lymphocyte cell counts <100 cells/mm³. Additional information is available at http://www.cdc.gov/nchstp/tb/tb_hiv_drugs/toc.htm.

[Return to top.](#)

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Exhibit CC

Aging in Correctional Custody: Setting a Policy Agenda for Older Prisoner Health Care

Brie A. Williams, MD, MS, Marc F. Stern, MD, MPH, Jeff Mellow, PhD, Meredith Safer, MPH, and Robert B. Greifinger, MD

An exponential rise in the number of older prisoners is creating new and costly challenges for the criminal justice system, state economies, and communities to which older former prisoners return. We convened a meeting of 29 national experts in correctional health care, academic medicine, nursing, and civil rights to identify knowledge gaps and to propose a policy agenda to improve the care of older prisoners. The group identified 9 priority areas to be addressed: definition of the older prisoner, correctional staff training, definition of functional impairment in prison, recognition and assessment of dementia, recognition of the special needs of older women prisoners, geriatric housing units, issues for older adults upon release, medical early release, and prison-based palliative medicine programs. (*Am J Public Health*. 2012;102:1475–1481. doi:10.2105/AJPH.2012.300704)

Among Western nations, mass incarceration is a uniquely American experience.¹ At the US prison population's zenith in 2008, 1 in every 100 American adults was incarcerated, with an incarceration rate of 756 per 100 000 persons.^{2,3} This rate surpasses that of Russia, which has the next-highest rate at 629 per 100 000 persons.³ Perhaps more surprising than the sheer number of Americans who are incarcerated are the changing demographics of the prison population; the most rapidly growing prisoner age groups are middle aged (45–54 years) and older (≥ 55 years).⁴ Between 2000 and 2009, the overall US prison population increased 16.3%, and the number of older prisoners increased 79.0%.^{5,6}

Through the Eighth Amendment to the US Constitution (which protects against cruel and unusual punishment), prisoners have a right to timely access to an appropriate level of care for serious medical needs.⁷ Yet many health care and service providers in the criminal justice system are underprepared to provide cost-effective quality care for older adults. Older prisoners disproportionately account for escalating correctional health care costs and create new and costly challenges for the criminal justice system. Prison-based health care systems increasingly must provide care to older persons with multiple, costly chronic medical conditions, such as diabetes, heart failure,

cognitive impairment, and end-stage liver disease.^{8–10} Older prisoners also have higher rates of disability than do younger prisoners, and their overall costs are approximately 3 times as high.^{9,11} In addition, older prisoners may generate high hidden costs. For example, prisons built to house younger persons may need to be renovated or rebuilt to accommodate an increasing number of older prisoners with disabilities.

Beyond legal and moral arguments for attention to the health care needs of older prisoners, we should consider other benefits to society. More than 95% of prisoners are eventually released to the community.¹² Many have chronic medical conditions and rely on expensive emergency services or are hospitalized after release.¹³ Earlier identification of and attention to age-related disabilities and chronic disease could foster independent function in the community through the use of community health care resources. Furthermore, prison programs that improve health and cognitive skills or that target substance abuse have been associated with decreased recidivism (and rearrest).¹⁴ Jails and prisons are also important sites for delivery of needed medical care to vulnerable populations with infectious diseases such as HIV, tuberculosis, and hepatitis C. In light of the increasing number and associated costs of older prisoners, our constitutional obligation to provide medical care to prisoners,

and the potential benefits to society, it is critical that a policy agenda be set to improve older prisoner health care. This policy agenda can be advanced through the efforts of policymakers, correctional administrators, health professions organizations, and correctional health care organizations.

We convened a roundtable meeting in 2011 at John Jay College of Criminal Justice in New York City to identify special considerations for the care of older prisoners and to propose a set of priority areas that need to be addressed in a new policy agenda. We also, when appropriate, identified important gaps in knowledge that should be addressed to better inform a policy agenda. This meeting was the third in a series of roundtable discussions that brought US private- and public-sector correctional health care leaders together with leaders in academic medicine, nursing, and civil rights to discuss topical issues in prison health care, where there are no existing standards. Discussion focused on the development of action items and standards through group consensus. The Jacob and Valeria Langeloth Foundation funded the public–private roundtables, with additional funding from private correctional health care vendors and in-kind contributions from John Jay College of Criminal Justice. The first¹⁵ and second¹⁶ roundtables addressed patient safety and challenges in contracting for correctional health care services, respectively.

METHODS

We selected participants for the invitational roundtable for their experience with and knowledge about prison health care, geriatrics, or palliative medicine. A total of 29 national experts (19 men and 10 women) participated, including 9 chief medical officers employed by public or private correctional health care providers, 5 independent medical or

psychology–psychiatry experts, 5 academic physicians, 2 prisoner advocates, and 2 foundation officers. The group had 14 physicians, 2 psychologists, 1 nurse, and 3 lawyers.

The goal of the roundtable was to produce a list of action items that can be pursued to advance a policy agenda to optimize older prisoner health care. Participants, sharing their unique perspective on aging and correctional health care, deliberated until a consensus developed on 9 priority areas and related key considerations. Participants then discussed the state of knowledge in each of the 9 priority

areas and formulated a list of action items for each one.

RESULTS

Through consensus, roundtable participants identified 9 priority areas for a policy agenda related to older prisoners, discussed the current knowledge base in each one, and identified important gaps in knowledge that should be addressed to move policy forward. A list of specific action items for each priority area is shown in Table 1.

Define the Older Prisoner

Although the prison population is rapidly and steadily aging, a consensus as to at what age a prisoner becomes older or geriatric has not been reached.¹⁷ The National Institute of Corrections and several research studies define older inmates as being aged 50 years or older.¹⁸ Other research studies and the Bureau of Justice Statistics have used 55 years, although starting with the 2007 prison census data the bureau began to report the number of prisoners in age groups 55 to 59 years, 60 to 64 years, and 65 years or older.¹⁹

TABLE 1—Consensus Recommendations From Roundtable on Health Care for Elderly Prisoners

Priority Area	Action Items
Define the older prisoner	Uniform age definition of geriatric or older prisoners should be 55 years or older. Recommendations for older prisoners should be extended to prisoners younger than 55 years who have cognitive or functional impairments in activities of daily living.
Train staff and health care providers	Develop, enhance, and institute geriatrics training programs for correctional, parole, probation officers, and health care providers.
Define functional impairment among prisoners	Create a list of functional requirements that may be necessary in prison. Indicate for each housing unit should indicate which of the prison's functional tasks are necessary for independence in that particular unit. Use list of functional requirements to screen for impairment upon intake for all ages and annually for prisoners aged 55 years or older and for younger prisoners who have impairments. Screen for sensory impairment (vision, hearing) upon intake for all ages and annually if present and for all prisoners aged 55 years or older.
Screen for dementia	Research should focus on establishing optimal screening tools for cognitive impairment in prisoners. Use optimal cognitive impairment screening tools should occur: Upon admission if prisoner is aged 55 years or older or has a history of traumatic brain injury, Yearly if condition present for progression of symptoms, Yearly for all for all prisoners aged 55 years or older, For all persons aged 45 years or older if referred for a disciplinary hearing for the first time. Use screening results to guide decisions about housing, programming, medical treatment, and discharge planning. Conduct research to evaluate the adequacy and cost effectiveness of these recommendations.
Identify needs of older women prisoners	Research should focus on understanding the health issues that may disproportionately affect older women prisoners.
Create uniform policies for geriatric housing units	Prison geriatric housing units should be available to older prisoners but should not be mandatory. Geriatric housing units must have similar access to programming and health care as in the general prison population. Policies should focus on planning for a continuum of care for older prisoners (independent living, assisted living, 24-h nursing care). Evidence-based criteria for long-term care classification should be developed and validated.
Identify release and reentry challenges for older adults	Transitional services linking former inmates to postrelease health care should be made available to older persons (and medically complex persons) upon release. Persons with cognitive impairment should have close supervision upon release. Reentry programs might focus on health literacy and self-efficacy.
Improve medical release policies	Create national medical eligibility criteria for early release. Address procedural barriers that could prevent some prisoners from accessing the application process.
Enhance prison palliative care programs	Enhance prison palliative care services. Even in the absence of a palliative care program, all health care providers should be trained in pain management and provider–patient communication.

Operationally, the definition of an older prisoner varies by state, with starting ages ranging from 50 to 70 years. In some states, no official age is designated.⁴

The definition of older age among prisoners is further blurred by a common differentiation that is made between an inmate's chronological and physiological age. Although empirical evidence for accelerated aging of prisoners is lacking, many estimate that prisoners' physiological age averages 10 to 15 years older than their chronological age.^{11,17} This difference is attributed to factors arising both prior to and during incarceration.²⁰ In addition to stress during incarceration, prisoners' health can be affected by previous life experiences such as inadequate access to medical care and substance abuse. Consequently, although experts generally agree that the phenomenon of a rapidly aging prisoner population needs to be addressed, the lack of standardized and comprehensive data, specifically about health care conditions and the costs associated with older prisoners, poses a problem in the implementation of evidence-based solutions to increase cost-effective, quality care.^{17,18}

Therefore, roundtable participants agreed that a consistent, national definition of the older prisoner is of paramount importance. A clear age cutoff for defining older prisoners would enable researchers to more consistently describe the population across facilities and would enable policy experts to better quantify health care and custodial costs for this high-intensity population. A consistent definition would facilitate the creation and assessment of guidelines to target screening and interventions toward lowering costs while enhancing the quality of care for older prisoners. To be consistent with data cutoffs reported by the Bureau of Justice Statistics, participants recommended defining older or geriatric prisoners as aged 55 years or older.

Roundtable participants also emphasized that chronological age is important only insofar as it is a surrogate measure of vulnerability and high health care costs, but that it is not always the optimal proxy measure. For instance, a 30-year-old quadriplegic may have far more functional impairment than a healthy person aged 68 years, and a person aged 50 years who has a history of traumatic brain injury may have more cognitive deficits than most 65-year-old prisoners.

Roundtable participants emphasized the need for a measure of age-related vulnerability that focuses on functional and cognitive status rather than on age alone.

Train Staff and Health Care Providers in Aging

According to roundtable participants, the increasing numbers of older prisoners should prompt prisons to offer staff training in the common health conditions and needs of older adults. In 2008, the Institute of Medicine's *Retooling for an Aging America: Building the Health Care Workforce* reported that health care and service providers from many professions are underprepared to care for older adults, including those in the criminal justice system.²¹ Although few geriatrics training programs exist for staff other than health care providers within correctional systems,²² both correctional health care providers and correctional staff have requested training in geriatrics.²³

Roundtable participants therefore recommended that existing geriatrics training programs for health care providers be adapted to correctional health care settings and that more training programs for custody staff should be developed and implemented. In particular, custodial staff (correctional, parole, and probation officer) training programs should focus on familiarizing officers with the following:

1. common normative age-associated conditions (e.g., vision loss and hearing deficits),
2. common pathological age-associated physical conditions (e.g., falls and incontinence),
3. common age-related clinically diagnosed cognitive conditions (e.g., dementia and delirium),
4. the challenges that all such conditions can pose in the custodial setting, and
5. ways to identify patients who need rapid assessment by a health care provider.

As an example, such training could help officers recognize that an older prisoner who seems to be disobeying orders may actually have a hearing impairment and prompt officers to seek a medical evaluation for the prisoner.

Define Prison-Based Functional Impairment

In the community, functional impairment—the inability to perform the daily physical tasks

that are necessary for independence—is commonly measured by assessing independence in activities of daily living (bathing, dressing, eating, toileting, transferring). Moderate-level functional impairment in community-dwelling older adults is generally measured by instrumental activities of daily living (e.g., ability to cook, take transportation, shop, and do laundry). Many of the tasks that are fundamentally necessary for independence in prison are similar to those in the community (e.g., the ability to feed oneself, toilet, and transfer from bed to chair). By contrast, prisoners may not require the ability to perform some of the tasks that are required of many independent elderly persons in the community (e.g., shopping or doing laundry). However, the prison environment may require performance of other tasks for independence. One study identified prison-specific daily tasks, such as the ability to get from one's cell to the dining hall on time for meals, to climb on and off one's assigned bunk, to hear orders from staff, or to get down on the floor for alarms.²⁴

Roundtable participants underscored the importance of defining activities of daily living that are necessary for independence in prison. Recognizing that such tasks may differ according to the facility or level of security in which a prisoner is housed, roundtable participants recommended that each facility create a list of the activities necessary for independence in each of their housing units and use these lists as a way to identify older prisoners in need of additional supervision and assistance.

Screen for Dementia

In 2000, the World Health Organization estimated dementia to be the 11th leading nonfatal burden in the world.²⁵ In addition to memory loss, symptoms of dementia can include personality changes, such as attention deficits, hallucinations, delusions, hypersexual behaviors, agitation, and aggression. Yet few studies have assessed the prevalence of dementia among prisoners, especially in the United States. Prevalence estimates range from 1% to 30% and have been limited by small sample size, selection bias, and nonstandardized assessment tools.^{26–29} Because of the aging of the prison population and a high prevalence of common risk factors for dementia among prisoners (e.g., traumatic brain

injury, low educational attainment, and drug and alcohol abuse),^{17,30–32} coupled with data from preliminary studies,^{10,33} we have good reason to believe that the prevalence of cognitive impairment among older prisoners is high.

The prevalence of dementia in prisoners is critical information that could be used to guide criminal justice health care policies. Dementia is a leading contributor to high health care costs.^{34–36} In addition, cognitive impairment—especially if unrecognized—could have devastating effects in the criminal justice setting, such as unwarranted disciplinary actions for events related to poor judgment, victimization, and difficulty in complying with complex parole instructions. Cognitive impairment could also be harder to detect in prison because many daily tasks, such as laundry and cooking, are done for prisoners, and still other, more complicated tasks, such as balancing finances, are not necessary at all. Roundtable participants advocated for cognitive screening upon intake for all older prisoners and annually for prisoners who turn 55 years while incarcerated.

Yet little is known about which cognitive screening tools are best for use in prisoners. For example, although the Mini-Mental State Examination³⁷ has been tested in many subpopulations, including persons of lower socioeconomic status, and can be adjusted to account for low educational attainment, the Montreal Cognitive Assessment cognitive screening tool³⁸ includes more questions related to executive dysfunction, which may be a particularly salient feature to measure in prisoners. Roundtable participants agreed that cognitive screening tools that are used in the community may not perform as well in prisoners for a variety of reasons, including the presence of lower educational attainment and lower literacy among prisoners than among the general US population. Participants also agreed that no conclusive evidence has determined the best dementia screening tool for use in prisoners. Roundtable participants suggested that a major goal of prison-based health research should be to establish effective cognitive impairment screening tools for the prison population.

Roundtable participants identified many potential strategic uses for screening results, once the optimal cognitive screening tools for prisoners are established. At the individual level, such uses include decisions related to

classification and housing assignments, programming, treatment of chronic conditions, and discharge planning and parole supervision. At the system level, such information would be helpful in developing predictors of high cost among older prisoners and improving criteria for release and parole decisions. Research should also examine potential adverse effects of screening, such as stigma or vulnerability associated with being identified as a prisoner with a deficit and the potential for parole denials.

Identify the Needs of Older Women Prisoners

The proportion of incarcerated women has grown quickly over the past several decades, although the incarceration rate of men (949/100 000 population) still far surpasses that of women (67/100 000).⁶ At the same time, the incarceration rate has increased at a faster rate among women aged 55 years or older than among younger women.³⁹ Currently, women account for 5% of the total prison population aged 55 years or older.⁶ Although there are still far fewer female than male prisoners, these demographic trends have important implications for the criminal justice health care system. However, probably because women have historically composed only a minority of prisoners, and because older women are but a small, if growing, subset of the female prison population, a paucity of literature exists on the health of older women prisoners.^{17,39}

What is known is that women in the United States on average live longer and report worse self-rated health than do men.^{40,41} Similarly, one study found that self-rated health was worse among older female than among older male prisoners.⁴¹ In addition, older age is among the strongest predictors of health care utilization in prison, and women prisoners of all ages have been shown to use health care services more frequently than do men.^{18,42} Thus the higher rates of diagnoses found in women prisoners of all ages⁴³ may at least partially reflect increased contact with the health care system.

Roundtable participants agreed that, in light of the increasing number of older women prisoners, expanded research on older women prisoners would lead to better guidance on the unique health and social issues that may affect this population.

Create Uniform Policies for Geriatric Housing Units

One of the greatest challenges for the criminal justice system is how to adapt prison facilities designed for younger persons to accommodate an aging population. Often, facilities cannot accommodate wheelchairs or walkers. The Americans With Disabilities Act does not have any requirements for correctional facilities. However, it mandates that prisoners with disabilities cannot be segregated and cannot be denied access to activities or services.^{44,45}

One solution is specialized facilities, often referred to as geriatric units. Such specialized facilities, which are intended for use only by frail older adults or disabled younger adults, differ by prison but might include, for example, handrails, accessible ramps and showers, and no bunk beds. Such geriatric units require a large up-front investment, yet proponents argue that centralizing aging populations enhances prisoner safety and make providing care easier and less costly.⁴⁴ Others argue that moving aging prisoners to a separate facility will remove them from their established prison social networks and make adjustment upon release more difficult.¹¹

Although forcibly separating people because of their disabilities is a violation of the Americans With Disabilities Act, clustering older adults in a model similar to that found in long-term care facilities may be appropriate if it is available to prisoners as a choice. However, clustering older prisoners together in housing units has the potential for both benefits and harms. Aggregating older prisoners into living quarters with greater access to assistance, supervision, and health care could help to target services and medical care programs to prisoners at highest risk of adverse health outcomes.⁴⁴ This could decrease cost by streamlining staff, improving chronic disease management, and decreasing hospitalizations.⁴⁴ Drawbacks to clustering older prisoners should also be considered. For instance, older prisoners are often regarded as a stabilizing force in the general prison population.⁴⁶ In addition, older prisoners may not want to be segregated by age, for many reasons.¹¹ For example, they might have to leave friends or family in the general prison population, or they

might enjoy interacting with younger prisoners. Therefore, roundtable participants agreed that age clustering can be beneficial in some circumstances, but recommended against policies that ignore prisoner preference.

Roundtable participants discussed the many physical changes that will be necessary in prisons in the years to come. For example, an increasing number of older prisoners will require 24-hour nursing care and accessible housing and recreation spaces that comply with the Americans With Disabilities Act. More prisons will need to develop plans for a continuum of care, from community independent living to assisted living facilities to skilled nursing care. In light of the limited numbers of 24-hour-care housing units and the high costs associated with such care, roundtable participants also underscored the importance of developing validated criteria for long-term care classification. Such a classification schema still needs to be developed and validated but might include patient preference, functional and cognitive assessments, or interdisciplinary assessment. Finally, participants agreed that all new construction should take into account the aging population and consider age-friendly architectural details such as low beds and toilets, wide doors for wheelchairs and assistive devices, and proximity to the dining hall.

Identify Release and Reentry Challenges for Older Adults

Because the aftermath of prisoner release is characterized by high rates of mortality, homelessness, reincarceration for parole violations, and heavy use of emergency medical services,^{13,14,47,48} a fundamental goal of any criminal justice policy agenda should be to determine how best to help individuals plan for and manage their health care needs upon community reentry. For instance, because of the high rates of multiple comorbidities in older prisoners and high rates of postrelease mortality in comparison with younger prisoners,^{47,48} specialized services may need to be developed for particularly frail or medically complex older persons upon release.

Postrelease transitional health care programs have been developed and implemented in several communities and have been particularly successful at enhancing access to medical care and reducing emergency department visits

for chronically ill recently released prisoners.^{49,50} In addition, studies suggest that self-efficacy for health management among older prisoners is positively correlated with health-promoting behaviors (e.g., taking safety precautions, exercising, and avoiding smoking)⁵¹; self-efficacy might therefore be an important educational component of effective reentry programs. Furthermore, prisoners have the nation's lowest literacy rates.⁵² In light of the association between low health literacy and mortality among older adults,⁵³ a focus on health literacy could be another critical component of successful reentry programs. Roundtable participants agreed that more research is needed to understand the role of transitional programs in improving outcomes for older persons after release, with a special focus on those who are cognitively impaired.

Improve Medical Release Policies

Medical release policies focus on prisoners whose age or health limits the risk they pose to the community. Releasing these prisoners could save correctional departments substantial amounts of money.⁵⁴ At the end of 2009, 15 states and the District of Columbia had provisions for geriatric release.⁴ These provisions vary by state and include discretionary parole, inmate furloughs, and medical or compassionate release. However, early release mechanisms are rarely used, eligibility requirements are narrow and vary by state, and application procedures may discourage older prisoners; as a result, few prisoners are granted early release.^{4,18,55} For example, Colorado released 3 prisoners under its policy from 2001 to 2008. As of 2009, Oregon had released no more than 2 prisoners per year. From 2001 to 2007, Virginia released 4 inmates.⁴

Roundtable participants agreed with others who have called for the creation of uniform, transparent medical eligibility criteria for compassionate or medical release that reflect the ways that people experience serious medical illness and death, including progressive frailty and dementia.⁵⁵ In addition, participants agreed that policy reforms are needed to address procedural barriers that could prevent older prisoners from accessing the application process, such as written requirements (which could have a negative impact on those with low literacy) or systems that require a prisoner to

initiate the petition (which could exclude prisoners with dementia).⁵⁵ Policy in this area should address the barriers to accessing early release when medically appropriate.

Enhance Prison Palliative Care Programs

Because many older adults will develop a serious medical illness and die in prison but will not qualify for early release, enhancement of prison palliative care services is greatly needed. Several notable, well-established, and successful hospice models operate in prisons across the United States, but palliative care programs that focus on preventive and diagnostic care at the time of diagnosis of a serious medical illness are less prevalent in the correctional health care setting.⁵⁶ Hospice is care focused on people who are actively dying (usually in the last 6 months of life). Palliative care—care that is focused on providing guidance and symptom control for seriously ill persons—has a demonstrated ability in the community to improve quality of life while reducing health care costs.⁵⁷

In the criminal justice system, research is needed to understand the potential cost savings and care improvement associated with palliative care. Participants called for a broader approach to palliative care in the criminal justice system that encompasses all seriously ill prisoners and not just those nearing the final stages of the dying process. Roundtable participants also agreed that a fundamental tenet of palliative care is health care provider–patient trust. Because trust can be a barrier in the prisoner–provider relationship in prison,^{56,58} expansion of effective palliative care programs may require independent palliative care contractors. In addition, participants underscored the need for a better understanding of prisoners' attitudes and beliefs about hospice and palliative care. They recommended that palliative care programs be piloted and tested and that policies address the barriers to providing quality care for prisoners with advanced medical illness.

Even in the absence of a fully operationalized palliative care program, prison health care systems can effectively enhance care for seriously ill prisoners. For instance, many physicians have not had training in pain management or in how to talk to people with life-challenging medical conditions.^{59,60} Programs to train providers in these skills have

been developed and are widely available. Among the benefits of prison-based hospice programs are the effects they have on the institution and on prisoner volunteers in hospices; roundtable participants agreed that studies exploring such benefits of hospice and palliative care programs should be encouraged.

DISCUSSION

Increasing numbers of older prisoners, coupled with soaring health-related costs and a relative dearth of evidence-based information about the health and health care needs of older prisoners, necessitates a policy agenda to improve cost-effective quality care for older prisoners. We assembled a group of specialists in prison health care, geriatrics, palliative medicine, mental health, geriatric psychiatry, prison administration, prisoner advocacy, and prison health care policy to participate in a roundtable event to identify priority areas, knowledge gaps, and a series of action items to improve the care of older prisoners.

The group's consensus recommendations focused on 9 priority areas: defining the term *older prisoner*, correctional staff training, defining functional impairment in prison, recognizing and assessing cognitive impairment and dementia, identifying the special needs of older women prisoners, creating uniform policies for geriatric housing units, identifying challenges for older adults upon release, improving medical early release policies, and enhancing prison-based palliative medicine programs. Some of these priority areas will require further investigation to identify optimal interventions and solutions to the aging crisis in the criminal justice system.

As the criminal justice system works to decrease its burgeoning population, it is important that national and state policymakers work with corrections and community organizations to understand the number of older inmates who are dual eligible (Medicare and Medicaid eligible),⁶¹ the impact on county and state services and budgets, and how gaps in the continuum of care can be addressed. This is especially important in states undergoing health reform initiatives. A first step will be to focus on these 9 priority areas to set the stage for collaboration among health care providers, health care professional societies, researchers,

prison administrators, civil rights advocates, and legislators, with the goal of optimizing the health and minimizing the costs associated with our nation's growing population of older prisoners. ■

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Contributors

B. A. Williams designed the study, planned and interpreted the analysis, and drafted the article. M. F. Stern, J. Mellow, and R. B. Greifinger helped to design the study. M. F. Stern, J. Mellow, M. Safer, and R. B. Greifinger made critical revisions to the article. J. Mellow and R. B. Greifinger secured funding for the meeting that led to this study. R. B. Greifinger supervised all aspects of the study design, analysis planning, interpretation, and article preparation.

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Human Participant Protection

Institutional review board approval was not needed for this study because no human participants were involved.

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Exhibit D

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Governor Abbott Issues Executive Order Implementing Essential Services And Activities Protocols ()

Governor Abbott Issues Executive Order Implementing Essential Services And Activities Protocols

March 31, 2020 | Austin, Texas | [Proclamation](#)

WHEREAS, I, Greg Abbott, Governor of Texas, issued a disaster proclamation on March 13, 2020, certifying under Section 418.014 of the Texas Government Code that the novel coronavirus (COVID-19) poses an imminent threat of disaster for all counties in the State of Texas; and

WHEREAS, the Commissioner of the Texas Department of State Health Services (DSHS), Dr. John Hellerstedt, has determined that COVID-19 represents a public health disaster within the meaning of Chapter 81 of the Texas Health and Safety Code; and

WHEREAS, I have issued numerous executive orders and suspensions of Texas laws in response to the COVID-19 disaster, aimed at protecting the health and safety of Texans and ensuring an effective response to this disaster; and



ASL Texas Governor's Executive Order GA 08

March 19, 2020, mandating certain obligations for Texans in accordance with the President's Coronavirus Guidelines for America, as promulgated by President Donald J. Trump and the Centers for Disease Control and Prevention (CDC) on March 16, 2020, which called upon Americans to take actions to slow the spread of COVID-19 for 15 days; and

WHEREAS, Executive Order GA-08 is subject to expiration at 11:59 p.m. on April 3, 2020, absent further action by the governor; and

WHEREAS, on March 29, 2020, to avoid scenarios that could lead to hundreds of thousands of deaths, the President announced that, based on advice from Dr. Anthony Fauci and Dr. Deborah Birx, the restrictive social-distancing Guidelines should extend through April 30, 2020; and

WHEREAS, DSHS Commissioner Dr. Hellerstedt and White House Coronavirus Response Coordinator Dr. Birx say that the spread of COVID-19 can be reduced by minimizing social gatherings; and

WHEREAS, on March 28, 2020, the U.S. Department of Homeland Security issued its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0, which provides an advisory list of critical-infrastructure sectors, workers, and functions that should continue during the COVID-19 response; and

WHEREAS, for state agencies and their employees and agents, the Office of the Attorney General of Texas has advised that local restrictions issued in response to the COVID-19 disaster do not apply to restrict the conduct of state business; and

should be allowed to continue providing essential services during the COVID-19 disaster, and all critical infrastructure should be allowed to remain operational; and

WHEREAS, the “governor is responsible for meeting ... the dangers to the state and people presented by disasters” under Section 418.011 of the Texas Government Code, and the legislature has given the governor broad authority to fulfill that responsibility; and

WHEREAS, under Section 418.012, the “governor may issue executive orders ... hav[ing] the force and effect of law;” and

WHEREAS, under Section 418.016(a), the “governor may suspend the provisions of any regulatory statute prescribing the procedures for conduct of state business ... if strict compliance with the provisions ... would in any way prevent, hinder, or delay necessary action in coping with a disaster;” and

WHEREAS, under Section 418.017(a), the “governor may use all available resources of state government and of political subdivisions that are reasonably necessary to cope with a disaster;” and

WHEREAS, under Section 418.018(c), the “governor may control ingress and egress to and from a disaster area and the movement of persons and the occupancy of premises in the area;” and

WHEREAS, under Section 418.173, failure to comply with any executive order issued during the COVID-19 disaster is an offense punishable by a fine not to

exceed \$1,000, confinement in jail for a term not to exceed 180 days, or both fine and confinement.

NOW, THEREFORE, I, Greg Abbott, Governor of Texas, by virtue of the power and authority vested in me by the Constitution and laws of the State of Texas, do hereby order the following on a statewide basis effective 12:01 a.m. on April 2, 2020, and continuing through April 30, 2020, subject to extension based on the status of COVID-19 in Texas and the recommendations of the CDC and the White House Coronavirus Task Force:

In accordance with guidance from DSHS Commissioner Dr. Hellerstedt, and to achieve the goals established by the President to reduce the spread of COVID-19, every person in Texas shall, except where necessary to provide or obtain essential services, minimize social gatherings and minimize in-person contact with people who are not in the same household.

“Essential services” shall consist of everything listed by the U.S. Department of Homeland Security in its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0, plus religious services conducted in churches, congregations, and houses of worship. Other essential services may be added to this list with the approval of the Texas Division of Emergency Management (TDEM). TDEM shall maintain an online list of essential services, as specified in this executive order and in any approved additions. Requests for additions should be directed to TDEM at EssentialServices@tdem.texas.gov (<mailto:EssentialServices@tdem.texas.gov>) or by visiting www.tdem.texas.gov/essentialservices.

In providing or obtaining essential services, people and businesses should follow the Guidelines from the President and the CDC by practicing good hygiene, environmental cleanliness, and sanitation, implementing social distancing, and working from home if possible. In particular, all services should be provided through remote telework from home unless they are essential services that cannot be provided through remote telework. If religious services cannot be conducted from home or through remote services, they should be conducted consistent with the Guidelines from the President and the CDC by practicing good hygiene, environmental cleanliness, and sanitation, and by implementing social distancing to prevent the spread of COVID-19.

In accordance with the Guidelines from the President and the CDC, people shall avoid eating or drinking at bars, restaurants, and food courts, or visiting gyms, massage establishments, tattoo studios, piercing studios, or cosmetology salons; provided, however, that the use of drive-thru, pickup, or delivery options for food and drinks is allowed and highly encouraged throughout the limited duration of this executive order.

This executive order does not prohibit people from accessing essential services or engaging in essential daily activities, such as going to the grocery store or gas station, providing or obtaining other essential services, visiting parks, hunting or fishing, or engaging in physical activity like jogging or bicycling, so long as the necessary precautions are maintained to reduce the transmission of COVID-19 and to minimize in-person contact with people who are not in the same household.

In accordance with the Guidelines from the President and the CDC, people shall not visit nursing homes, state supported living centers, assisted living facilities, or long-term care facilities unless to provide critical assistance as determined through guidance from the Texas Health and Human Services Commission.

In accordance with the Guidelines from the President and the CDC, schools shall remain temporarily closed to in-person classroom attendance and shall not recommence before May 4, 2020.

This executive order shall supersede any conflicting order issued by local officials in response to the COVID-19 disaster, but only to the extent that such a local order restricts essential services allowed by this executive order or allows gatherings prohibited by this executive order. I hereby suspend Sections 418.1015(b) and 418.108 of the Texas Government Code, Chapter 81, Subchapter E of the Texas Health and Safety Code, and any other relevant statutes, to the extent necessary to ensure that local officials do not impose restrictions inconsistent with this executive order, provided that local officials may enforce this executive order as well as local restrictions that are consistent with this executive order.

This executive order supersedes Executive Order GA-08, but not Executive Orders GA-09, GA-10, GA-11, GA-12, or GA-13, and shall remain in effect and in full force until April 30, 2020, unless it is modified, amended, rescinded, or superseded by the governor.

Given under my hand this the 31st day of March, 2020.

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Exhibit DD

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News

Alabama prison system's COVID-19 plan anticipates widespread infection, deaths, National Guard intervention

Updated Apr 07, 2020; Posted Apr 05, 2020



Prisoners live in close proximity to one another at Alabama's Easterling Correctional Facility, pictured here on Feb. 25, 2020. (Alabama Department of Corrections)

Alabama's prisons are underprepared to prevent and manage the spread of COVID-19, prompting a worst-case scenario plan that could call on the National Guard to work in the prisons should the virus take hold in the system, according to an internal Department of Corrections document obtained by [AL.com](#).

The 263-page planning document states that the physical design of Alabama's prisons, severe overcrowding and understaffing combine to make it impossible to follow recommended protocols for keeping prisoners and employees from contracting the coronavirus.

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In the worst-case scenario outlined in the plan, system-wide shortfalls could result in widespread infection, the need for military intervention and nearly 200 inmate deaths. And the plan shows that the department anticipates that it may need to spend more than \$2 million on supplies to respond to the pandemic, including personal protective equipment, medication and body bags.

[AL.com](#) obtained a copy of the document, dubbed 2020 Pandemic Continuity of Operations Plan, on Thursday, the same day some officials first received it via email. The document was dated April 1 and signed on that date by Ruth Naglich, the department's associate commissioner for health services.

Inmates and their families, correctional officers, attorneys, journalists and other stakeholders have been asking the department about the impact of coronavirus on the state prison system and its nearly 22,000 inmates for weeks. Epidemiologists,

Alabama and other states with overcrowded prisons to take swift, decisive action to keep coronavirus from spreading behind bars and killing large numbers of prisoners.

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In a telephone call Friday night, DOC Commissioner Jefferson Dunn said he and the department he runs are doing everything in their power to avoid such a result in Alabama.

"The number one thing in my mind is safety, is trying our best to prevent the virus from getting into the facilities, and then mitigating the impact," he said.

But the DOC has provided little in the way of information about how it is managing the crisis, beyond three written statements since March 19 that failed to address many concerns about its coronavirus response. The DOC planning document was dated nearly three weeks after Gov. Kay Ivey declared a state of emergency in response to coronavirus on March 13, the same day her office released a statement about Alabama's first confirmed COVID-19 case.

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The department says that currently, 17 prisoners have been diagnosed with COVID-19. It recently posted a chart on its website detailing the amount of testing for the virus that has been undertaken in its facilities. The chart showed that only 17 state prisoners had been tested for the virus as of Tuesday. Twelve of those tests came back negative and the results of the other five were still pending, according to the chart.

The department, which operates more than two dozen correctional facilities across the state, reported on Wednesday that two of its employees had tested positive for coronavirus as of that date.

The planning document characterizes prisoners as being at "Very High" risk of being exposed to the disease and says it is "unrealistic to assume cases of COVID-19 will not be found within one or more ADOC facilities."

The department states elsewhere in the document that "[w]ithout containment and in consideration of underlying risk factors ... the projected potential deaths within ADOC inmate population" due to COVID-19 total 185.

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Crowded conditions

Alabama's state prisons were not designed for anywhere near the number of inmates they currently hold, and the strain on the system makes it more difficult to stop infectious diseases from spreading, according to the document.

"It is expected that the current limitations within our prison system, which typically relies upon open-bay and double-bunk dormitories housing 150 to 200 inmates each, may accelerate the transmission of disease among the inmate population, as well as the ADOC staff," it states.

Case 3:20-cv-00832-E Document 47-3 Filed 04/18/20 Page 148 of 229 PageID 998
Elsewhere, the document states that the facility of approximately 22,000 inmates being housed in crowded dormitories create[s] a Very High Exposure Risk situation."

Conditions in Alabama's prisons have long been decried by inmates and advocates as inhumane and dangerous. That scrutiny has intensified since April 3, 2019, when the U.S. Department of Justice alleged that the state's prisons were plagued by unconstitutional levels of violence and sexual abuse.

In recent years, state leaders have debated a proposal first floated by former Gov. Robert Bentley to shutter Alabama's aging prisons and replace them with a handful of mega-prisons that estimates suggest would cost the state more than \$1 billion. Ivey has pushed an updated version of the proposal and in February 2019 announced her administration was seeking bids to build three regional mega-prisons, but progress toward implementing such a plan has been slow.

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Dunn said that the overcrowding makes it impossible to follow social-distancing guidelines within DOC facilities.

"We're 170 percent overcrowded and you've seen the pictures," he said. "There's not enough physical space in our system right now to do the six-foot distancing, so then what do you do?"

He said that before anyone enters one of its facilities, the DOC is requiring their temperatures be taken, and if they have a fever or other symptoms of illness, they are turned away. The document states that housing units and common spaces should be cleaned and sanitized twice daily.

The plan lays out protocols for quarantining or isolating prisoners who are diagnosed with COVID-19, prisoners suspected of having the disease and newly arrived inmates. But it anticipates that some facilities will not have enough space to

quarantine or isolate everyone who falls under those categories.

"If the number of quarantined individuals exceeds the number of individual quarantine spaces available in the facility, be especially mindful of those who are at higher risk of severe illness from COVID-19," the document says.

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It also states that there is not enough personal protection equipment (PPE) for everyone in Alabama's prisons who may need it:

"Infection control supplies ... would not be available at levels required to address inmate needs during a pandemic event" and "[t]he assurance of available PPE supplies cannot be guaranteed to staff other than direct health care providers at this time."

Dunn said that while many people working and living in state prisons currently do not have access to sufficient personal protective equipment, the department is working to fill that gap.

"The supplies, as you know, are low. We are seeking supply chains to our vendors and other ways but as we wait on those, we're also making it ourselves and by probably the end of next week we'll have that distributed out. And we're going to start with our staff and then those inmates that are most vulnerable and then the entire inmate population," he said.

The DOC [announced on its website](#) Wednesday that inmates in work plants in two Alabama prisons had begun sewing facemasks for staff and inmates to wear and that the department expects them to be able to produce 2,000 to 2,500 masks per day. The prisoners are making simple cloth masks, not the higher-grade N95 masks that health experts recommend medical professionals wear when caring for COVID-19 patients.

The document says that even prison health care workers may not have access to N95 masks and other personal protective equipment.

"Major distributors in the U.S. have reported shortages of PPE, specifically N95 respirators, facemasks, and gowns," it states. "Alternatives due to shortages should be considered. Facemask should be used if respirator not available. Respirators are expected with confirmed COVID-19 cases, as available. Prioritize use of PPE if shortage is significant."

Dunn said that the cloth masks inmates are producing offer meaningful protection from the virus.

"These masks have been looked at by the [Alabama] Department of Public Health and they have been indicated that yes, [they] can prevent droplets from going from one person to another," he said.

"So, I guess the question is if I don't have anything else right now, would you rather I don't do that? Of course not. We do what we can with what we have immediately while we're trying to pursue and find better and more equipment and supplies."

If the coronavirus outbreak becomes severe enough, the planning document states that the DOC expects that up to 50 percent of correctional officers, contracted medical professionals and other workers in the prisons could call out of work at the same time. That level of absenteeism could leave the already understaffed facilities unable to operate without outside assistance.

"ADOC would not be able to hire enough security personnel to adequately ensure the primary mission essential functions relative to facility security and public safety are performed during a pandemic event," the document states.

"ADOC would be forced to request outside assistance from other state law enforcement agencies, as well as the Alabama National Guard to ensure facility security and public safety are maintained," it says elsewhere.

In fact, the document states that an agreement is already in place to provide for members of the National Guard to fill "perimeter posts" if necessary. But the plan states that members of the Guard would likely also need to work inside the prisons.

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The combination of widespread absences among prison health care workers and the surge in inmates needing medical attention due to COVID-19 symptoms would also greatly strain the system's ability to provide adequate health care to inmates, according to the document.

"Competition will increase for health care resources and supplies that are already in short supply, including health care personnel and medication," the document states.

"Health care operations will focus on critical care issues. The opportunity to meet all routine health care needs of the inmates will be severely compromised."

The document also includes a table called "Care and Treatment Supply List" that lists supplies with a total cost of \$2.3 million. It lists a wide range of items that the DOC and Wexford Health Services could have to purchase to respond to a bad coronavirus outbreak in the prisons, including thousands of wipes, gloves and paper towels, 300 COVID-19 diagnostic tests, 1,300 boxes of N95 masks and 312 body bags.

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'Woefully underprepared'

Experts say that prisons and jails are breeding grounds for disease, and correctional facilities across the U.S. including the jail complex on Rikers Island in New York City are already experiencing outbreaks of COVID-19.

Dr. Sarah Fortune, chair of the Department of Immunology and Infectious Diseases at the Harvard T.H. Chan School of Public Health, wrote in an open letter that it is vital that leaders immediately take decisive action to stop coronavirus from running rampant through prisons and jails.

"As state and local officials work to mitigate the threat of the disease, they must take proactive steps to reduce their detained populations before an outbreak occurs," she wrote. "Failure to act now will endanger the lives of both detained and non-detained people alike."

The Alabama prison system is particularly ill-equipped to stop the spread of coronavirus, according to Amy Kimpel, an assistant professor at the University of Alabama School of Law and director of the school's Criminal Defense Clinic.

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"Obviously the more overcrowded facilities are, the more difficult it is to deal with any infection. If it does get into the prison system, with how overcrowded and understaffed Alabama prisons are, I worry that that's a real recipe for disaster," she said.

Jenny Carroll, the Wiggins, Child, Quinn & Pantazis Professor of Law at the University of Alabama School of Law, said she and her colleagues have heard from numerous correctional officers and inmates in Alabama prisons who worry the DOC is "woefully underprepared" for coronavirus.

Dunn said the DOC is following the recommendations of the U.S. Centers for Disease Control and Prevention.

"If you look at and go compare what we're doing with the CDC guidelines on correctional facilities, we are almost in lockstep with them to the max extent that we can be," Dunn said. "If there's things we can do better, great. Bring them on."

But Carroll said that if COVID-19 spreads widely within Alabama prisons, it would ultimately strain the limited resources of hospitals across the state.

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"If all these people get infected, we know a certain percentage of them are going to require a higher level of care than is available in these facilities. So they are going to burden hospitals that are already under stress," she said.

alternative is you're going to start seeing the bodies pile up."

The DOC needs to move quickly if it hopes to avoid grim outcomes, Carroll said.

"We need to be thinking about housing alternatives. Other jurisdictions have been looking at empty hotels and empty dorm rooms and the advantage of this is it allows people to maintain social distancing and allows for better hygiene," she said.

Another option would be to release nonviolent offenders and people with compromised immune systems and other major health issues from custody, either via parole, furlough or other means, according to Kimpel. That would greatly reduce the chance of infection for the prisoners most at risk of contracting the virus while cutting the prison population, which would reduce strain on prison health care facilities and resources while allowing for more social distancing among inmates.

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On March 20, the DOC announced it was halting the transfer of inmates from county jails to state correctional facilities for 30 days to help mitigate the spread of coronavirus. On Tuesday, Ivey issued a proclamation encouraging "local officials" to help slow the spread of COVID-19 by reducing "the number of local inmates held in county jails in a way that does not jeopardize public safety." She did not propose releasing state prisoners.

States including California, Michigan, New Jersey and New York have selected subsets of prisoners – i.e. the elderly, those who have severe medical conditions, or those who have little time remaining on their sentences – to release in response to the coronavirus.

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"To whatever extent possible, reduce the population," Kimpel said. "We need to get folks at least temporarily furloughed who are in those high-risk situations."

Fortune echoed such statements in her open letter.

"Anybody detained for a non-violent offense or who does not pose an immediate danger to themselves or others should be released immediately, before an outbreak occurs," she wrote. "This is especially true of medically vulnerable people, including elderly, immunocompromised, and pregnant individuals."

If the DOC does not take meaningful action now, Carroll said she worries that COVID-19 could kill hundreds of people in Alabama prisons.

"If the estimate is 185 [deaths], I would say that's low," she said. "I'm talking to people in New York and what they're telling me is the rate of infection they're seeing among the incarcerated population in New York is eight to 10 times what they're seeing in the free population."



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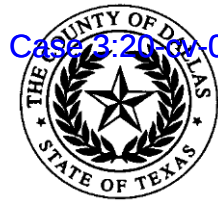
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Exhibit E



DALLAS COUNTY

AMENDED ORDER OF COUNTY JUDGE CLAY JENKINS

Safer At Home Order

DATE AMENDED ORDER ISSUED: April 6, 2020

WHEREAS, pursuant to Texas Government Code Section 418.108, Dallas County Judge Clay Jenkins issued a Declaration of Local Disaster for Public Health Emergency on March 12, 2020, due to a novel coronavirus now designated SARS-CoV2 which causes the disease COVID-19;

WHEREAS, on March 12, 2020, Judge Jenkins issued an Order in furtherance of his authority to protect the safety and welfare of the public by slowing the spread of the virus;

WHEREAS, the on-going evaluation of circumstances related to the virus and the updated recommendations of the Centers for Disease Control and the Texas Department of State Health Services warrant the March 12, 2020 Order of County Judge Clay Jenkins be amended;

WHEREAS, on March 16, 2020, President Trump acknowledged the gravity of the COVID-19 pandemic, releasing strict new guidelines to limit people's interactions, including that Americans should avoid groups of more than 10 people;

WHEREAS, on March 19, 2020, the Dallas County Commissioners Court issued an Order of Continuance of Declaration of Local Disaster for Public Health Emergency that affirmed the activation of the Dallas County Emergency Management Plan and extends the Declaration of Local Disaster until 11:59 p.m. on April 3, 2020, unless rescinded by order of the Commissioners Court.

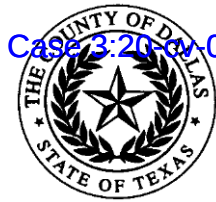
WHEREAS, on March 24, 2020, the World Health Organization indicated that the United States has the potential to become the center of the COVID-19 pandemic;

WHEREAS, this Emergency Order is necessary because of the propensity of the virus to spread person to person and also because the virus is physically causing property damage due to its proclivity to attach to surfaces for prolonged periods of time;

WHEREAS, this Emergency Order is necessary to protect the lives, health, welfare, and safety of the County's residents from the devastating impacts of this pandemic;

THEREFORE, the March 12, 2020, Order of County Judge Clay Jenkins is hereby AMENDED as follows:

Summary: The virus that causes 2019 Coronavirus Disease (COVID-19) is easily transmitted through person to person contact, especially in group settings, and it is essential that the spread of the virus be slowed to protect the ability of public and private health care providers to handle the influx of new patients and safeguard public health and safety. Because of the risk of the rapid spread of the virus, and the need to protect the most vulnerable members of the community, this Order requires all individuals anywhere in Dallas County to shelter in place – that is, stay at home – except for certain essential activities and work to provide essential business and government services or perform essential public infrastructure construction, including housing. This Order



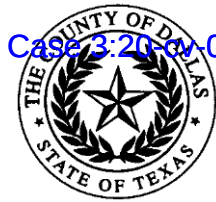
DALLAS COUNTY

takes effect at 11:59 p.m. on April 6, 2020 and will continue through 11:59 p.m. on April 30, 2020, subject to the limited exceptions and under the terms and conditions more particularly set forth below.

UNDER THE AUTHORITY OF TEXAS GOVERNMENT CODE

SECTION 418.108, DALLAS COUNTY JUDGE CLAY JENKINS ORDERS:

1. Effective as of 11:59 p.m. on April 6, 2020, and continuing until 11:59 p.m. on April 30, 2020:
 - (a) All individuals currently living within Dallas County are ordered to shelter at their place of residence. For the purposes of this Order, residences include hotels, motels, shared rentals, and similar facilities. To the extent individuals are using shared or outdoor spaces, they must at all times as reasonably as possible maintain social distancing of at least six feet from any other person when they are outside their residence. All persons may leave their residences only for Essential Activities, or to provide or perform Essential Governmental Functions, or to operate Essential Businesses, all as defined in Section 2.
 - (b) All businesses operating within Dallas County, except Essential Businesses as defined in below in Section 2, are required to cease all activities at facilities located within the County except Minimum Basic Operations as defined in Section 2. For clarity, businesses may continue operations consisting exclusively of employees or contractors performing activities at their own residences (i.e. working from home). To the greatest extent possible, all Essential Businesses shall comply with the Social Distancing Rules attached, including maintaining six feet social distancing for both employees and the general public.
 - (c) Employees of Essential Businesses, whose physical presence at the workplace is not essential to operations, are directed to use telecommuting to the fullest extent possible.
 - (d) All public or private gatherings of any number of people occurring outside a single household or living unit are prohibited, except as otherwise provided herein. Nothing in this Order prohibits the gathering of members of a household or living unit.
 - (e) All elective medical, surgical, and dental procedures are prohibited anywhere in Dallas County. Hospitals, ambulatory surgery centers, dental offices, and other medical facilities are directed to identify procedures that are deemed "elective" by assessing which procedures can be postponed or cancelled based on patient risk considering the emergency need for redirection of resources to COVID-19 response.
2. Definitions:
 - a. For purposes of this Order, individuals may leave their residence only to perform any of the following "**Essential Activities**":
 - i. To engage in activities or perform tasks essential to their health and safety, or to the health and safety of their family or household members (for



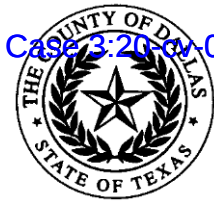
DALLAS COUNTY

example, obtaining medical supplies or medication, visiting a health care professional, or obtaining supplies need to work from home).

- ii. To obtain necessary services or supplies for themselves and their family or household members, or to deliver those services or supplies to others (for example, food, pet supply, and any other household consumer products, and products necessary to maintain the safety, sanitation, and essential operation of residences.
- iii. To engage in outdoor activity, provided the individuals comply with social distancing requirements of six feet (for example, walking, biking, hiking, running, golfing, and tennis).
- iv. To perform work providing essential products and services at an Essential Business or to otherwise carry out activities specifically permitted in this Order.
- v. To care for a family member or pet in another household.
- vi. To move to another residence either in or outside Dallas County.
- vii. To engage in **"Essential Travel,"** which includes travel for any of the following purposes: (1) travel related to the provision of or access to Essential Activities, Essential Governmental Functions, Essential Businesses Essential Critical Infrastructure, and Minimum Basic Operation; (2) travel to care for elderly, minors, dependents, persons with disabilities, or other vulnerable persons; (3) travel to or from educational institutions for purposes of receiving materials for distance learning, for receiving meals, and any other related services; (4) travel to return to a place of residence from outside the jurisdiction; (5) travel required by law enforcement or court order; (6) travel by church staff or clergy for the purpose of production of remote delivery of religious services and other ministries requiring travel; (7) travel related to attending a funeral service; or (8) travel required for non-residents to return to their place of residence outside the County.

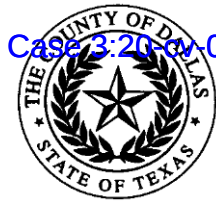
b. For purposes of this Order, **"Essential Businesses"** means:

- i. **Essential Healthcare Operations.** Healthcare Operations includes but is not limited to hospitals, clinics, dentists, chiropractors, physical therapy, optometry offices, pharmacies, pharmaceutical and biotechnology companies, other healthcare facilities, healthcare suppliers, mental health providers, substance abuse service providers, blood banks, medical research, laboratory services, certified doulas, or any related and/or ancillary healthcare services. Home-based and residential-based care for seniors, adults, or children are also considered healthcare operations. Healthcare operations also includes veterinary care and all health and welfare services provided to animals. This exemption shall be viewed broadly to avoid any impacts to the delivery of healthcare. Healthcare operations do not include fitness and exercise gyms, personal training, gymnastics studios, and similar facilities. Healthcare operations do not include elective medical, surgical, and dental procedures as established in accordance with Subsection 1(e) of this Order.



DALLAS COUNTY

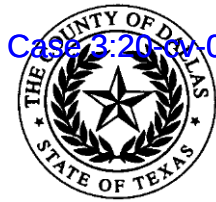
- ii. **Essential Governmental Functions.** All services provided by local governments needed to ensure the continuing operation of the government agencies to provide for the health, safety and welfare of the public. Each governmental body will determine its Essential Governmental Functions and identify the employees and/or contractors necessary to the performance of those functions. Further, nothing in this order shall prohibit any individual from performing or accessing “Essential Governmental Functions.” All Essential Governmental Functions shall be performed in compliance with social distancing requirements of six feet, to the extent possible. This Order does not apply to Federal or State Government.
- iii. **Essential Critical Infrastructure.** All public and private facilities and assets, including both physical and cyber systems, and other functions and sectors vital to the security, governance, and public health, safety of Dallas County. Critical infrastructure includes, but is not limited to, utilities such as electricity, gas, water and wastewater, roads and highways, public transportation, solid waste and recycle collection and removal, oil refining, roads and highways, public transportation, defense and national security-related operations, and manufacturing operations supplying essential items to Essential Businesses, Essential Governmental Functions, and Critical Infrastructure. All manufacturers and distributors shall comply with the Rules for Manufacturers and Distributors set out in Exhibit C. Critical Infrastructure employers should implement screening precautions to protect employees and all activity shall be performed in compliance with social distancing guidelines attached. For reference, the U.S. Department of Homeland Security in its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0, can be found here: <https://www.cisa.gov/publication/guidance-essential-critical-infrastructure-workforce>
- iv. **Stores that Sell Groceries and Other Essential Supplies.** Grocery stores, supermarkets, warehouse stores, big-box stores, bodegas, liquor stores, convenience stores, and farmers’ markets that sell food products and household consumer products (such as cleaning and personal care products). This includes stores that sell groceries and also sell other non-grocery products. The sale of self-service food items is prohibited. Stores that sell groceries and other essential supplies shall comply with the Rules for Essential Retail Establishments set out in Exhibit A.
- v. **Restaurants.** Restaurants with or without drive-in or drive-through services and microbreweries, micro-distilleries, or wineries may only provide take out, delivery, or drive-through services as allowed by law. In-person service is prohibited. Customers may order and pay inside, but are prohibited from waiting inside the restaurant for their food. All food must be brought outside to customers. To allow for increased access to restaurants, this Order hereby suspends all laws and regulations prohibiting people from walking in a drive-through.



DALLAS COUNTY

- vi. **Food Cultivation.** Food cultivation, including farming, fishing, and livestock.
- vii. **Delivery of Groceries and Essential Supplies.** Businesses that ship or deliver groceries, food, hygiene products, and essential supplies directly to residences or essential businesses. All businesses that deliver groceries and essential supplies shall comply with the rules set out in Exhibit E.
- viii. **Transportation.** Operation, maintenance, and repair of airlines, taxis, and other private transportation providers (such as Uber and Lyft) that provide transportation services necessary for the performance of essential activities and essential travel.
- ix. **Gas Stations and Businesses Needed for Transportation.** Gas stations, auto-supply stores, auto-repair, and bicycle repair. Auto-dealerships, for in-person mechanical services or to complete an online transaction on an appointment basis only. Gas stations and convenience stores are prohibited from selling self-service food items. Gas stations and businesses needed for transportation shall comply with the Rules for Essential Retail Establishments set out in Exhibit A.
- x. **Critical Trades.** Plumbers, electricians, exterminators, janitors, lawn care services, pool cleaners, maintenance and security, and other service providers who provide services that are necessary to maintaining the safety, sanitation, and essential operations of residences, Essential Businesses, Essential Government Functions, and Critical Infrastructure. Critical Trade does not include discretionary maintenance or improvements. Union representatives and their staff for the purpose of performing critical labor union functions, including the maintenance of health and welfare funds and checking on the well-being and safety of members.

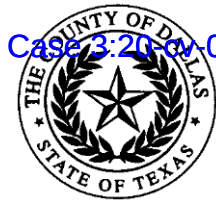
Construction. Construction for public works, residential, commercial, and schools. Elective additions and maintenance are prohibited. Protecting construction worker from the spread of COVID19 is extremely important for their safety and for public health, all construction sites must follow the COVID-19 Safety Recommendations issued by the Construction Industry Safety Coalition, including, but not limited to, the Rules for Construction Industry set out in Exhibit B. Failure to strictly comply with this Order can result in penalties described below. Additionally, the general contractor and non-compliant subcontractor can be removed from the essential business list.
- xi. **Professional Services.** Professional services, such as legal or accounting services, when necessary to assist in compliance with legally mandated activities or services necessary to avoid imminent harm to a client. Real estate and inspection services, so long as they comply with the rules set out in Exhibit F.
- xii. **Financial Institutions.** Banks and related depository financial institutions, credit unions, insurance companies, title companies, payroll and accounting services. Check cashing businesses and pawnshops so long as they comply with the rules set out in Exhibit D. A copy of Exhibit D must be prominently



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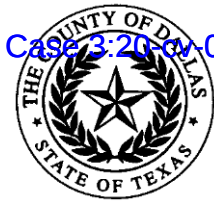
displayed in each establishment in English and Spanish and a copy must also be provided to each customer in the customer's preferred language.

- xiii. **Information Technology Services/Telecommunications Services.** IT and IT services and their essential service vendors, including the provision of essential global, national, and local infrastructure for computing services, business infrastructure, communications, and web-based services, and critical manufacturing, as well as telecommunications services, internet access and broadband/communications services.
- xiv. **Essential Retail.** Laundromats, dry cleaners, and laundry service providers., hardware stores, and related facilities. Firearm and ammunition suppliers and retailers for purposes of safety and security. Hardware stores and business that sell electrical, plumbing, and other materials necessary to support Essential Businesses, and Essential Government Functions, and Critical Infrastructure. Essential retail establishments shall comply with the Rules for Essential Retail Establishments set out in Exhibit A.
- xv. **Hotels and Motels.** Hotels and motels, to the extent used for lodging or delivery or carry-out food services.
- xvi. **Providers of Basic Necessities to Economically Disadvantaged Populations.** Businesses or organizations that provide food, shelter, and social services, and other necessities of life for economically disadvantaged or otherwise needy individuals.
- xvii. **Essential Services Necessary to Maintain Essential Operations of Residences or Other Essential Businesses.** . Businesses or services that supply other Essential Businesses, Essential Government Services, and Critical Infrastructure with the support or supplies needed to operate; including but not limited to mail, shipping and delivery services, warehouse/distribution and fulfillment, storage, moving services, janitorial services, laundry services, computer, audio or video electronics, sanitary equipment, and medical equipment.. To the extent possible, services shall be provided in compliance with Social Distancing Rules attached, including distancing of six feet and routine use of hand sanitizer. All employers that are common carriers, motor carriers, private carriers, shippers, delivery services, moving companies and contract carriers that load or unload cargo, supplies, equipment or goods at any point located in Dallas County shall comply with the rules set out in Exhibit E.
- xviii. **Supplies to Work From Home.** Businesses that supply products needed for people to work from home.
- xix. **Public and Private Education.** Public and private educational institutions, only for the purposes of facilitating distance learning or performing essential functions, provided compliance with the Social Distancing Rules is maintained
- xx. **News Media.** Newspapers, television, radio, and other media services.



DALLAS COUNTY

- xxi. **Childcare Services.** Childcare facilities providing services or community service providers offering childcare services under the following mandatory conditions:
 - 1. Childcare services shall only be provided to employees of Essential Businesses;
 - 2. Childcare must be carried out in stable groups of 12 or fewer ("stable" means that the same 12 or fewer children are in the same group each day);
 - 3. Children shall not change from one group to another;
 - 4. If more than one group of children is cared for at one facility, each group shall be in a separate room. Groups shall not mix with each other;
 - 5. Childcare providers shall remain solely with one group of children.
- xxii. **Animal Care Services.** Animal shelters, veterinary care, and pet food and supply stores. Grooming, if necessary for the health and wellbeing of the animal. Pet daycare, but only for employees of Essential Businesses. To the greatest extent possible, all services must be performed in compliance with social distancing requirements of six feet. Pet food and supply stores shall comply with the Rules for Essential Retail Establishments set out in Exhibit A.
- xxiii. **Religious and Worship Services.** Religious and worship services may only be provided by audio, video, and teleconference. Religious institutions must limit in-person staff to ten (10) people or less at one time, and twenty-five (25) people total per day, when preparing for or conducting video or teleconference services, and all individuals must follow the Social Distancing Rules including the six feet social distancing.
- xxiv. **Funeral Services.** Funeral, mortuary, cremation, burial, cemetery, and related services, provided that social distancing of six feet per person is maintained to the greatest extent possible.
- c. For purposes of this Order, **Minimum Basic Operations** means the following, provided that employees comply with the Social Distancing Rules:
 - i. The minimum necessary activities to maintain the value of the business's inventory, ensure security, process payroll and employee benefits, or for related functions.
 - ii. The minimum necessary activities to facilitate employees of the business being able to continue to work remotely from their residences.
- 3. The Dallas County Sheriff's Office, the Dallas County Fire Marshal's Office, and other peace officers, are hereby authorized to enforce this Order. A violation of this order may be punishable through criminal or civil enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days.
- 4. Any manufacturer who retools their business for the purpose of manufacturing and producing ventilators, masks, personal protective equipment, or any supply necessary for



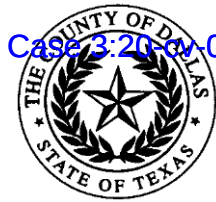
DALLAS COUNTY

Essential Healthcare Operations may apply for an “essential business” exemption under this Order. Submit requests for an exemption to BusinessCOVID19@dallascounty.org.

5. All public, private, and commercial laboratories operating within Dallas County and performing COVID-19 testing shall report by 5:00 p.m. each day for the prior 24-hour period:
 - a. The number of COVID-19 tests performed; and
 - b. The number of positive COVID-19 tests.

Reports shall be made to Dallas County Judge Clay Jenkins at Clay.Jenkins@dallascounty.org and Dallas County Health and Human Services Director Dr. Philip Huang at Philip.Huang@dallascounty.org. Reporting laboratories shall not provide names or any other identifiable health information that could be used to identify an individual patient.

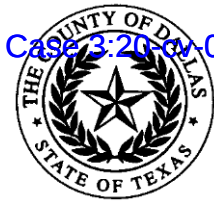
6. Employers shall not implement any rules making a negative COVID-19 test or a note from a healthcare provider a requirement before a COVID-19 recovered employee can return to work.
7. Under this Order, no person shall sell any of the following goods or services for more than the regular retail price the person charged for the goods or services on March 16, 2020, except where an increased retail price is the result of increased supplier or other costs (including the loss of supplier supporting funds):
 - a. groceries, beverages, toilet articles, and ice;
 - b. restaurant, cafeteria, and boarding-house meals; and
 - c. medicine, pharmaceutical and medical equipment, and supplies.
8. Grocery stores, supermarkets, warehouse stores, hospitals, and medical facilities are experiencing high levels of demand for a large number of products, requiring more deliveries from manufacturers and distribution centers to serve their customers. A number of Texas cities and local associations have implemented restrictions on delivery hours to stores to mitigate truck noise and traffic. Due to the need to deliver products as quickly and efficiently as possible during this critical timeframe, this Order hereby suspends all delivery hour restrictions for transport to or from any entity involved in the selling or distribution of food products, medicine, or medical supplies in Dallas County for the next 60 days.
9. Due to increased demand for bath or toilet tissue resulting from stock up buying and individuals who purchase for resale, a mandatory limit on toilet paper sales is instituted until the supply chain meets the demand or two weeks, whichever comes first. All sales of bath or toilet tissue occurring in Dallas County are limited to the greater of: (a) twelve (12) rolls per purchase or (b) one (1) package per purchase. This provision does not apply to the sale of bath or tissue paper to a government organization or essential business.
10. Due to the public health emergency, the Office of the Dallas County Judge hereby advises the Dallas County Justices of the Peace to suspend eviction hearings and writs of possession for at least the next 60 days to prevent renters from being displaced. Nothing in the moratorium relieves tenants of liability for unpaid rent. Landlords should cap late fees for delayed payment of rent at fifteen dollars (\$15) per month.



DALLAS COUNTY

11. If someone in a household has tested positive for coronavirus, the household is ordered to isolate at home. Members of the household cannot go to work, school, or any other community function, except for workers included in Essential Healthcare Operations who may continue to work in accordance with CDC guidance.
12. Nursing homes, retirement, and long-term care facilities are instructed by this Order to prohibit non-essential visitors from accessing their facilities unless to provide critical assistance or for end-of-life visitation.
13. Public and private schools and institutions of higher education are instructed by this Order to provide a safety plan to Dallas County Office of Homeland Security and Emergency Management 72 hours before students return to a classroom setting.
14. Additionally, the Office of the Dallas County Judge and the Health Authority instructs all employees to remain at home if sick. Employees of private businesses and nonprofits with six (6) or more employees in the City of Dallas can use their paid sick leave when they are sick or to care for sick family members.
15. This Order shall be in effect until 11:59 p.m. on April 3, 2020, or until it is either rescinded, superseded, or amended pursuant to applicable law.
16. The County of Dallas must promptly provide copies of this Order by posting on the Dallas County Health and Human Services website. In addition, the owner, manager, or operator of any facility that is likely to be impacted by this Order is strongly encouraged to post a copy of this Order onsite and to provide a copy to any member of the public asking for a copy. If any subsection, sentence, clause, phrase, or word of this Order or any application of it to any person, structure, gathering, or circumstance is held to be invalid or unconstitutional by a decision of a court of competent jurisdiction, then such decision will not affect the validity of the remaining portions or applications of this Order.

IT IS SO ORDERED
CLAY JENKINS
DALLAS COUNTY JUDGE



DALLAS COUNTY

EXHIBIT A

Rules for Essential Retailers

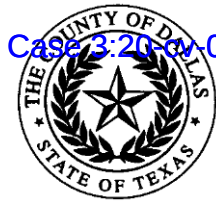
Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus and protective measures to be taken in all establishments.

Definition of Essential Retailers.

1. Stores that Sell Groceries and Other Essential Supplies. Grocery stores, supermarkets, warehouse stores, big-box stores, bodegas, liquor stores, convenience stores, and farmers' markets that sell food products and household consumer products (such as cleaning and personal care products). This includes stores that sell groceries and also sell other non-grocery products.
2. Gas Stations and Businesses Needed for Transportation. Gas stations, auto-supply stores, auto-repair, and bicycle repair. Auto-dealerships, for in-person mechanical services or to complete an online transaction on an appointment basis only.
3. Other Essential Retailers. Pet food and supply stores. Laundromats, dry cleaners, and laundry service providers, hardware stores, and related facilities. Firearm and ammunition suppliers and retailers for purposes of safety and security. Hardware stores and business that sell electrical, plumbing, and other materials necessary to support Essential Businesses, and Essential Government Functions, and Critical Infrastructure.

Safety Rules for All Essential Retailers. All employers involved in essential retail activity must follow the requirements set forth in the rules below:

1. All employees must take their temperature at their residence before going to an Essential Retailer. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible and as equipment becomes available, an Essential Retailer must implement a system whereby supervisors must check the temperature of all employees with a forehead thermometer before the employee begins work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are not permitted to work and must be sent home immediately;
3. Gatherings during meals or breaks are prohibited;
4. Employees must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the employees;
5. Employers must allow non-essential personnel to work from home when possible;
6. Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms and food preparation areas. Ensure that adequate supplies are maintained;



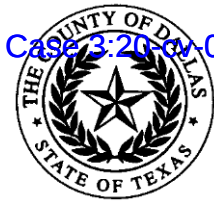
DALLAS COUNTY

7. Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift.
8. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so employees may follow hygiene guidelines;
9. There shall be no adverse action taken against an employee who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to work because the employee has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
10. Employers must designate both a member of management as the COVID-19 Safety Monitor and a senior hourly worker (that is not a member of management) as the COVID-19 Vice Safety Monitor at each store to have the authority to work together to enforce these rules. Employers in unionized workplaces should consult with the employee's representatives on this designation.

General Rules for Essential Retailers.

1. Employers shall implement an organized line system where employees, customers, and other persons are not less than six feet apart at all times;
2. To the greatest extent practicable, designate shopping times for at risk populations (seniors, pregnant people, and people with underlying health conditions);
3. To the greatest extent possible, implement a system to restrict the number of customers who are physically present at an Essential Retailer so that six foot spacing may be maintained;
4. Employers shall implement purchase limits on high-demand items (toilet paper, soap, hand sanitizer). These purchase limits do not apply to a government organization or essential business;
5. To the greatest extent possible, employers shall offer pick up services or delivery services of grocery items and other essential supplies; and
6. Self-service food stations are prohibited. Self-service stations are defined as items that customers use common serving utensils to serve themselves, including but not limited to, salad bars, hot dog stands, self-service bulk food items, and other related food items. This section does not apply to self-checkout stations, so long as the checkout stations are cleaned at least every 30 minutes.

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any essential retailer who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT B

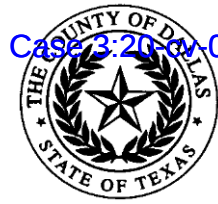
Rules for the Construction Industry

Reason for Construction Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

Construction as Critical Infrastructure. The Order classified construction for public works, residential, commercial, and schools as critical infrastructure. Elective additions and maintenance are prohibited.

Requirements for Construction. All employers involved in construction activity must follow the requirements set forth in the COVID-19 Safety Recommendations issued by the Construction Industry Safety Coalition, including the rules below:

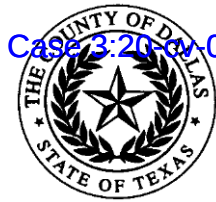
1. All workers and contractors (hereafter referred to as “workers”) must take their temperature at their residence. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible, implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker or contractor has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
3. To the greatest extent possible, shift work must be implemented such that each shift shall have no more than fifty percent (50%) of the workers who were on shift on March 16, 2020. Once assigned to a shift, workers shall not change from one shift to another;
4. To the greatest extent possible, limit crossover of subcontractors;
5. Gatherings during meals or breaks are prohibited;
6. Workers must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
7. Workers must not use a common water cooler. Employers shall provide individual water bottles or instruct workers to bring their own;
8. Employers must allow non-essential personnel to work from home when possible;
9. Employers must provide soap and water and hand sanitizer in the workplace, including all restrooms. Ensure that adequate supplies are maintained;
10. If running water is available at the site, workers must wash their hands for at least twenty (20) seconds before beginning work, when they remove gloves, and before and after the use of shared items such as tools or multi-user devices, before and after any meal or restroom breaks, and when their shift or work time ends.
11. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines;
12. Employers must provide one (1) working flushing toilet for every fifteen (15) workers on site or one (1) outdoor portable toilet for every 10 workers on site;
13. There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not



DALLAS COUNTY

- reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
14. Employers must designate a COVID-19 safety monitor on each site who has the authority to enforce these rules;

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any general contractor or subcontractor who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT C

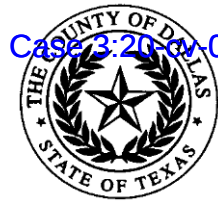
Rules for Manufacturers and Distributors

Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

Definition of Critical Manufacturers and Distributors. This Order defines Critical Manufacturing and Distribution as the industries listed in the U.S. Department of Homeland Security in its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0.

Rules for Manufacturers and Distributors. All employers involved in critical manufacturing and distribution activity must follow the requirements set forth in the rules below:

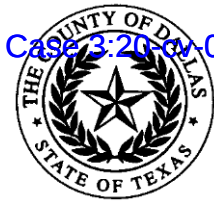
1. All employees must take their temperature at their residence before going to work at a manufacturing or distribution center. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors check the temperature of all employees before the employee begins work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are not permitted to work and must be sent home immediately;
3. Gatherings during meals or breaks are prohibited;
4. Employees must keep a six (6) foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the employees;
5. To the extent practicable, employers shall adjust shift timing to allow for greater physical distance between employees;
6. Employers must allow non-essential personnel to work from home when possible;
7. Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms. Employers shall ensure that adequate supplies of soap and hand sanitizer are maintained;
8. Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to departing the work site.
9. Employers shall discourage employees from sharing work tools when possible.
10. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so employees may follow hygiene guidelines;
11. There shall be no adverse action taken against an employee who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
12. Employers must designate both a member of management as the COVID-19 Safety Monitor and a senior hourly employee (that is not a member of management), or a non-management



DALLAS COUNTY

employee if an hourly employee is not available, as the COVID-19 Vice Safety Monitor at each site to have the authority to work together to enforce these rules. Employers in unionized workplaces should consult with the employee's representatives on this designation.

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any manufacturer and distributor who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT D

Rules for Financial Institutions

Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

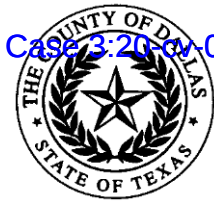
1. Check Cashing Businesses

Application. For the purpose of this Order, "Check Cashing Business" means a person or entity that for compensation engages, in whole or in part, in the business of cashing checks, drafts, money orders, traveler's checks or other instruments for the transmission or payment of money. This Order does not apply to a retail seller engaged primarily in the business of selling consumer goods, including consumables, to retail buyers that cash checks or issue money orders as a service to its customers that is incidental to its main purpose or business.

Interest and Fees. Fees shall not exceed 2% of the amount of the check, draft, or money order, or \$2, whichever is greater. Interest on a loan or advance of money shall not exceed 15% per annum of the total amount of the advance, provided that total fees associated with the loan do not exceed \$75, regardless of the name or type of charge. A check cashing business may charge only those charges expressly authorized in this Order in connection with a loan or advance issued.

Safety Rules. All check cashing businesses must follow the requirements set forth in the rules below:

- a) All employees must take their temperature at their residence before going to work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
- b) To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
- c) Employees must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
- d) Employers shall restrict the number of customers physically present in the store to only those people necessary to complete the transaction as determined by the customer. All other individuals must remain outside the store while the transaction is completed;
- e) Employers must allow non-essential personnel to work from home when possible;
- f) Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms and food preparation areas. Employers must ensure that adequate supplies are maintained;
- g) Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift;



DALLAS COUNTY

- h) Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines; and
- i) There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy.

2. Pawnshops

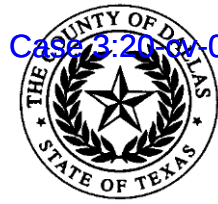
Application. These rules apply to all locations or premises at which a pawnbroker regularly conducts business.

Interest and Fees. Interest on a loan of money extended pursuant to a pawn transaction shall not exceed 15% per annum of the total amount of the advance, provided that total fees associated with the loan do not exceed \$75, regardless of the name or type of charge. A pawnshop may charge only those charges expressly authorized in this Order in connection with a pawnshop loan.

Minimum Term Length. A pawnshop shall hold the goods pledged as collateral for at least 120 days after the end of the Emergency Declaration issued by Judge Jenkins or the end of the Emergency Declaration issued by Governor Abbott, whichever is later.

Safety Rules. All pawnshops must follow the requirements set forth in the rules below:

- a) All employees must take their temperature at their residence before going to work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
- b) To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
- c) Employees must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
- d) Employers shall restrict the number of customers so that only one customer is physically present in the store at a time;
- e) Employers must allow non-essential personnel to work from home when possible;
- f) Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms and food preparation areas. Employers must ensure that adequate supplies are maintained;
- g) Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift;
- h) Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines; and
- i) There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to

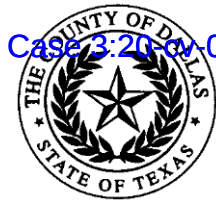


DALLAS COUNTY

work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy.

3) **Enforcement**

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any financial institution who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT E

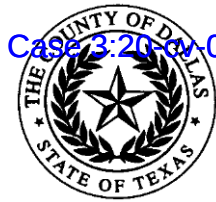
Rules for Common Carriers, Shipper, Delivery Services, and Related Companies

Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

Definition of Common Carriers. All employers which are common carriers, motor carriers, private carriers, shippers, delivery services, moving companies and contract carriers which load or unload cargo, supplies, equipment or goods at any point located in Dallas County.

Rules for Common Carriers. All employers involved in trucking, shipping, delivery and moving services, and related industries must follow the requirements set forth in the rules below:

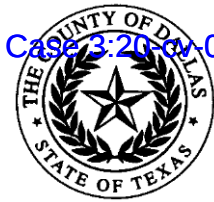
1. All employees must take their temperature at their residence before going to work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors check the temperature of all employees before the employee begins work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are not permitted to work and must be sent home immediately;
3. Gatherings during meals or breaks are prohibited;
4. Employees must keep a six (6) foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the employees;
5. To the extent practicable, employers shall adjust shift timing to allow for greater physical distance between employees, including coordination between dispatch and scheduling so that there is no overlap between crews traveling to different locations;
6. Employers must allow non-essential personnel to work from home when possible;
7. Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms. Employers shall ensure that adequate supplies of soap and hand sanitizer are maintained. Hand sanitizer must be available in each vehicle;
8. Workers must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift;
9. Employers must ensure that employees use gloves when handling shared tools or equipment (such as dollies, dock plates, and controls) and that employees wash their hands for at least 20 seconds after handling such tools or equipment;
10. To the greatest extent possible, drivers and other personnel should stay in their vehicles while the vehicles are being loaded and unloaded, unless required for employee safety;



DALLAS COUNTY

11. To the greatest extent possible, receipts, bills of lading, acknowledgements and other such documentation should be electronic so as minimize the need for personnel to physically sign and exchange documents;
12. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines;
13. There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) has not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
14. Employers must designate both a member of management and an employee who is not a member of management COVID-19 safety monitors at each of the business's warehouses, yards or other locations who have the authority to work together to enforce these rules. Employers in unionized workplaces should consult with the employee's representatives on this designation.

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any common carrier or related business who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT F

Rules for Real Estate Agents

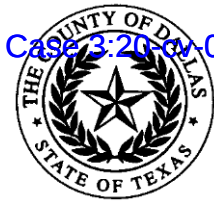
Reason for Rules. The purpose of these rules is to outline the steps that every Agent/Employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent exposure to coronavirus and protective measures to be taken in all real estate showing.

Definition of Real Estate Activity. For the purposes of this Order, real estate activity includes any activity governed by the Texas Real Estate License Act, the Inspector Act, the Residential Service Company Act, and the Timeshare Act.

Safety Rules for All Real Estate Agents/Employees. All realtors and their employees involved in essential real estate activity must follow the requirements set forth in the rules below:

1. Open Houses are prohibited;
2. All realtors and their employees (hereafter referred to as "realtors") must take their temperature at their residence prior to any real estate showing. If an agent has a temperature above 99.6 degrees Fahrenheit, they are prohibited from participating in any real estate showings and must remain at their residence;
3. Realtors and clients must travel to showings in separate vehicles;
4. Realtors, clients, and homeowners must follow the six-foot social distancing rule at all times;
5. Realtors and staff should limit in person contact and conduct business remotely as much as possible;
6. Realtors must wear a protective mask and provide new, unused protective masks to clients when touring a site;
7. Employers must designate a COVID-19 safety monitor at each real estate office who has the authority to enforce these rules;

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any realtor who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

DCHHS Social Distancing Rules

1) Vulnerable Populations: Limit Outings

- Vulnerable populations include people who are:
 - 60 years old and older.
 - People with certain health conditions such as heart disease, lung disease, diabetes, kidney disease and weakened immune systems.
- For vulnerable populations, don't go to gatherings unless it is essential. Stay home. Avoid people who are sick.

2) Workplace and Businesses: Minimize Exposure

- Suspend nonessential employee travel.
- Ensure employees practice social distancing and do not work within six feet of one another.
- Urge essential employees to stay home when they are sick and maximize flexibility in sick leave benefits.
- Do not require a doctor's note for employees who are sick.
- Maximize telecommuting options.
- Persons who need to be at work to provide essential services of great benefit to the community must take steps in their workplace to minimize risk.

3) Cancel Non-essential Events

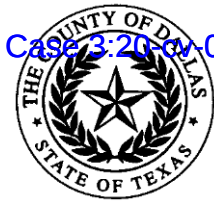
- Cancel non-essential events.
- Do not attend any events or gatherings if sick.
- For events that aren't cancelled, we recommend:
 - Having hand washing capabilities, hand sanitizers and tissues available.
 - Frequently cleaning high touch surface areas like counter tops and hand rails.
 - Finding ways to implement social distancing..

4) Schools: Safety First

- Do not have your child attend school if sick.
- If you have a child with chronic health conditions, consult the child's doctor about school attendance.
- Schools should equip all classrooms with hand sanitizers and tissues.
- Recommend rescheduling or cancelling events that are not essential.
- Explore remote teaching and online options to continue learning.
- Schools should develop a plan for citywide school closures, and families should prepare for further closures.

5) Transit: Cleaning and Protection

- Increase cleaning of vehicles and high touch surface areas.
- Provide hand washing/hand sanitizers and tissues in stations and on vehicles.
- Ensure social distancing practices are implemented to the full extent possible.



DALLAS COUNTY

6) Health Care Settings: Avoid as possible, protect the vulnerable

- Long-term care facilities should have a COVID-19 plan in accordance with CDC or state guidelines.
- Long-term care facilities should restrict all visitation except for certain compassionate care situations, such as end of life situations.
- The general public should avoid going to medical settings such as hospitals, nursing homes and long-term care facilities, even if you are not ill.
- If you are ill, call your health care provider ahead of time, and you may be able to be served by phone.
- Do not visit emergency rooms unless it is essential.
- Follow guidance and directions of all facilities.

7) Everyone: Do your part

The best way for all Dallas County residents to reduce their risk of getting sick, as with seasonal colds or the flu, still applies to prevent COVID-19:

- Wash hands with soap and water for at least 20 seconds.
- Cough or sneeze into your elbow or a tissue. Throw the tissue in the trash.
- Stay home if you are sick.
- Avoid touching your face.
- Try alternatives to shaking hands, like an elbow bump or wave.
- If you have recently returned from a country, state or region with ongoing COVID-19 infections, monitor your health and follow the instructions of public health officials and CDC guidance.
- There is no recommendation to wear masks at this time to prevent yourself from getting sick.

You can also prepare for the disruption caused by an outbreak. Preparedness actions include:

- Prepare to work from home if that is possible for your job, and your employer.
- Make sure you have a supply of all essential medications for your family.
- Prepare a child care plan if you or a caregiver are sick.
- Make arrangements about how your family will manage school closures.
- Plan for how you can care for a sick family member without getting sick yourself.
- Take care of each other and check in by phone with friends, family and neighbors that are vulnerable to serious illness or death if they get COVID-19.
- Keep common spaces clean to help maintain a healthy environment for you and others. Frequently touched surfaces should be cleaned regularly with disinfecting sprays, wipes or common household cleaning products.

Exhibit EE



CORONAVIRUS NEWS CHICAGO

Illinois National Guard medics headed to Stateville as inmate coronavirus cases rise

One inmate has died at the maximum-security prison from COVID-19 and at least 48 more have tested positive.

By Tina Sfondeles and Carlos Ballesteros | Updated Apr 1, 2020, 2:15pm CDT



Brig. Gen. Richard R. Neely, Adjutant General of the Illinois National Guard (center) speaks with Army Lt. Col. Jason Steinkamp and Air Force Lt. Col. Brian Gahan in Peoria last week during day-two of testing procedures for first responders and healthcare workers at Harwood Heights Community Testing Site. | Provided

The Illinois National Guard is sending 30 service members to help with medical care at Stateville Correctional Center, where **one inmate has died** from the coronavirus and at least 48 more have tested positive.

The service members are medics from the Illinois Army National Guard's 33rd Infantry Brigade Combat Team based in Urbana and will be setting up medical tents, triaging and providing medical care for inmates at the Crest Hill-based correctional center, according to Gov. J.B. Pritzker's office.

Lt. Col. Brad Leighton, a spokesman for the Illinois National Guard, said the medics should arrive by the end of the week.

“It takes a couple days to screen [and] equip them,” Leighton said.

The medical help is intended to assist inmates who need care but not hospitalization. The medical tents will be “fully operational there before the end of the week,” Pritzker spokeswoman Jordan Abudayyeh said.

While the service members are treating inmates on site, the governor Tuesday said any inmate “who falls seriously ill with COVID-19 will receive available medical assistance to get through it, including an ICU bed, and a ventilator if necessary.”

“My administration will not be in the business of claiming one life is worth more than another,” Pritzker said.

Pritzker’s office on Wednesday said there are a total of 48 inmates at Stateville who tested positive for coronavirus. That’s 16 more cases than were reported Tuesday and up from zero confirmed cases last week.

There are nearly 37,000 people in the state’s prisons, according to Pritzker. State figures show around 20% of prisoners are over the age of 50. Thousands more have underlying medical conditions.

Illinois suspended all visits to the state’s prisons two weeks ago in an effort to prevent the spread of the coronavirus, but cases continue to climb. The Illinois Department of Corrections so far has reported confirmed cases of COVID-19 **at seven of its facilities**, with 25 staff members testing positive as of Wednesday.

Criminal justice advocates have **urged Pritzker for weeks** to release thousands of people from Illinois prisons to alleviate overcrowding and blunt the spread of COVID-19.

Last week, **more than a dozen public health** experts from Chicago urged Pritzker to commute sentences for all prisoners over the age of 50, those who are medically vulnerable and inmates who have less than a year remaining of their sentences.

Pritzker said nearly 300 inmates were released as of Tuesday afternoon, including pregnant females and low-level offenders who are near completing their sentences. The

governor also said the Department of Corrections is reviewing the case files of low-risk offenders who may be able to be released early.

“All have been thoroughly vetted to make sure that there are no histories of violence, and particularly domestic violence,” Pritzker said.

He did, however, acknowledge that “[ensuring] that each person released in this manner has a place to return to “has been “one of our greatest challenges.”

The Democratic governor **assigned duties to about 60 Illinois National Guard service members** on March 16 to assist the state with its COVID-19 response. Since then, a total of 430 Illinois Army National Guard members have been activated, the governor’s office said.

Exhibit F

SHELTER IN PLACE: Safer at Home Order City of Dallas FAQs¹

I. ESSENTIAL ACTIVITIES.

Individuals may leave their residence only to perform any of the following:

- To engage in activities or perform tasks essential to their health and safety, or to the health and safety of their family or household members (for example, obtaining medical supplies or medication, visiting a health care professional, or obtaining supplies needed to work from home).
- To obtain necessary services or supplies for themselves and their family or household members, or to deliver those services or supplies to others (for example, food, pet supply, and any other household consumer products, and products necessary to maintain the safety, sanitation, and essential operation of residences).
- To engage in outdoor activity, provided the individuals comply with social distancing requirements of six feet (for example, walking, biking, hiking, running, and tennis).
- To perform work providing essential products and services at an Essential Business or to otherwise carry out activities specifically permitted in this Order. Employees of Essential Businesses, whose physical presence at the workplace is not essential to operations, are directed to use telecommuting to the fullest extent possible.
- To care for a family member or pet in another household.
- To move to another residence either in or outside Dallas County.
- To engage in “Essential Travel,” which includes travel for any of the following purposes: (1) travel related to the provision of or access to Essential Activities, Essential Governmental Functions, Essential Businesses, Essential Critical Infrastructure, and Minimum Basic Operation; (2) travel to care for elderly, minors, dependents, persons with disabilities, or other vulnerable persons; (3) travel to or from educational institutions for purposes of receiving materials for distance learning, for receiving meals, and any other related services; (4) travel to return to a place of residence from outside the jurisdiction; (5) travel required by law enforcement or court order; (6) travel by church staff or clergy for the purpose of production of remote delivery of religious services and other ministries requiring travel; (7) travel related to attending a funeral service; or (8) travel required for non-residents to return to their place of residence outside the County.

¹ These FAQs are the City of Dallas’ interpretation of its Emergency Regulations which include the regulations contained in Executive Order GA-14 of Governor Greg Abbott and the orders of Dallas County Judge Clay Jenkins related to the COVID-19 Pandemic. Please note that if these interpretations differ from interpretations of these Emergency Regulations by either Governor Abbott or Dallas County Judge Jenkins, those interpretations shall control.

II. ESSENTIAL SERVICES/BUSINESSES.

ESSENTIAL HEALTHCARE OPERATIONS. This exemption is meant to be viewed broadly to avoid any impacts to the delivery of healthcare.

- Hospitals, clinics, dentists, chiropractors, physical therapy, optometry offices, pharmacies, pharmaceutical and biotechnology companies, other healthcare facilities, healthcare suppliers, mental health providers, substance abuse service providers, blood banks, medical research, laboratory services, certified doulas, or any related and/or ancillary healthcare services.
- Home-based and residential-based care for seniors, adults, or children.
- Essential healthcare operations do not include elective medical, surgical, and dental procedures.
- Veterinary care is included under this exception, but not elective veterinary medical, surgical, and dental procedures.
- There is no requirement that essential healthcare operations be provided via telemedicine.
- Support therapy groups, such as Alcoholics Anonymous, are mental health and/or substance abuse services. Support therapy groups are encouraged to have virtual meetings. If in-person meetings are conducted, the DCHHS Social Distancing Recommendations should be followed.

ESSENTIAL GOVERNMENT FUNCTIONS.

- All services provided by local governments needed to ensure the continuing operation of the government agencies to provide for the health, safety, and welfare of the public.
- Vehicle towing from public rights-of-way.

INFRASTRUCTURE, TRADES, AND CONSTRUCTION.

ESSENTIAL CRITICAL INFRASTRUCTURE.

- Electricity, gas, water and wastewater, roads and highways, public transportation, solid waste and recycling collection and removal, oil refining, defense and national security-related operations, and manufacturing.
- Manufacturing operations supplying essential items to Essential Businesses, Essential Government Functions, and Critical Infrastructure.
- Wholesale warehouse companies that distribute and sell to residential home builders, commercial general contractors, home flippers, and other non-retail customers.
- All manufacturers and distributors shall comply with the Rules for Manufacturers and Distributors set out in Exhibit C.
- The U.S. Department of Homeland Security in its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0, can be found here: <https://www.cisa.gov/publication/guidance-essential-critical-infrastructure-workforce>

TRANSPORTATION.

- Operation, maintenance, and repair of airlines, taxis, and other private transportation providers (such as Uber and Lyft) that provide transportation services necessary for the performance of essential activities and essential travel.
- Airlines and airports.

GAS STATIONS AND BUSINESSES NEEDED FOR TRANSPORTATION.

- Gas stations, auto-supply stores, auto-repair, and bicycle repair.
- Auto-dealerships, for in-person mechanical services or to complete an online transaction on an appointment basis only.
- Vehicle towing in conjunction with auto repair.
- Gas stations and convenience stores are prohibited from selling self-service food items.
- Must comply with the Rules for Essential Retail Establishments in Exhibit A.

CRITICAL TRADES.

- Plumbers, electricians, exterminators, janitors, lawn care services, pool cleaners, maintenance, and security.
- Service providers who provide services that are necessary to maintaining the safety, sanitation, and essential operations of residences, Essential Businesses, Essential Government Functions, and Critical Infrastructure.
- Union representatives and their staff for the purpose of performing critical labor union functions, including the maintenance of health and welfare funds and checking on the well-being and safety of members.
- Critical Trade does not include discretionary maintenance or improvements.

CONSTRUCTION.

- Construction for public works, residential, commercial, and schools.
- Elective additions and maintenance are prohibited. New projects for additions or remodels are not allowed. Projects already in progress may be completed.
- Landscaping companies are essential to the construction of residential, commercial, and school properties.
- Tile manufacturing is a necessary operation for residential, commercial, and school construction.
- Sign installation at Essential Businesses only.
 - All construction sites must follow the COVID-19 Safety Recommendations issued by the Construction Industry Safety Coalition, including, but not limited to, the Rules for Construction Industry in Exhibit B.

PROFESSIONAL, FINANCIAL, AND TECHNICAL SERVICES.

PROFESSIONAL SERVICES.

- Attorneys, together with their clients, shall determine what legal services are necessary to comply with legally mandated activities.
- Accounting professionals, together with their clients, shall determine what accounting services are necessary to comply with legally mandated activities.

- Real estate and inspection services (including appraisers and the leasing of residential properties) as long as they comply with the rules in Exhibit F.

FINANCIAL INSTITUTIONS.

- Banks and other financial institutions, credit unions, insurance companies, title companies, and payroll and accounting services. Check cashing businesses and pawn shops as long as they comply with the rules in Exhibit D. A copy of Exhibit D must be prominently displayed in each establishment in English and Spanish and a copy must also be provided to each customer in the customer's preferred language. **Inquiries related to enforcement of Dallas County's Order regarding interest, fees, and terms will be referred to Dallas County.**

INFORMATION TECHNOLOGY SERVICES/TELECOMMUNICATIONS SERVICES.

- IT and IT services and their essential service vendors, including the provision of essential global, national, and local infrastructure for computing services, business infrastructure, communications, and web-based services, and critical manufacturing.
- Telecommunications services, internet access and broadband/communications services.

STORES AND RESTAURANTS.

STORES THAT SELL GROCERIES AND OTHER ESSENTIAL SUPPLIES.

- Grocery stores, supermarkets, warehouse stores, big-box stores, bodegas, liquor stores, convenience stores, and farmers' markets that sell food products and household consumer products (such as cleaning and personal care products).
- The sale of self-service food items is prohibited.
Must comply with the Rules for Essential Retail Establishments in Exhibit A.

DELIVERY OF GROCERIES AND ESSENTIAL SUPPLIES.

- Businesses that ship or deliver groceries, food, hygiene products, and essential supplies directly to residences or essential businesses.

RESTAURANTS.

- Restaurants with or without drive-in or drive-through services and microbreweries, micro-distilleries, or wineries may only provide take out, delivery, or drive-through services.
- Customers may order and pay inside but are prohibited from waiting inside the restaurant for their food. All food must be brought outside to customers.
- Customers are permitted to walk through a drive-through.
- All restaurant dining rooms are closed.

FOOD CULTIVATION.

- Food cultivation, including farming, fishing, and livestock.

DELIVERY OF GROCERIES AND ESSENTIAL SUPPLIES.

- Businesses that ship or deliver groceries, food, hygiene products, and essential supplies directly to residences or essential businesses.
- All businesses that deliver groceries and essential supplies shall comply with the rules in Exhibit E.

ESSENTIAL RETAIL.

- Laundromats, dry cleaners, and laundry service providers, and related facilities.
- Firearm and ammunition suppliers and retailers for purposes of safety and security.
- Hardware stores and business that sell electrical, plumbing, and other materials necessary to support Essential Businesses, Essential Government Functions, and Critical Infrastructure.
- Pet food and pet supply stores.
- Florist shops must be closed to customers but may take phone and online orders and provide delivery, curbside pick-up, or drive-through services.
- The following retail stores that sell *food products and/or household staples* are included as essential:
 - Department stores.
 - Neighborhood markets.
 - Retail stores located within a hotel.
- Pawn shops are included as essential retail that sells firearms and products needed for people to work from home.
- Car washes are essential to the extent they provide services that are necessary to the safety, sanitation, and essential operations of residents and essential businesses.
- Plant nurseries are essential businesses that supply other Essential Businesses with the support of supplies needed to operate.
- Must comply with the Rules for Essential Retail Establishments in Exhibit A.

SUPPLIES TO WORK FROM HOME. Businesses that supply products needed for people to work from home (i.e. office supply stores, cellular device retail stores).

EDUCATION, CHILD CARE, AND ANIMAL CARE.

PUBLIC AND PRIVATE EDUCATION.

- Public and private educational institutions, only for the purposes of facilitating distance learning or performing essential functions, provided compliance with the Social Distancing Rules is maintained.
- Schools and other entities that typically provide free services to students or members of the public on a pick-up and take-away basis only. In addition, obtaining necessary supplies for family or household members is an essential activity.

CHILD CARE SERVICES.

- Child care facilities providing services or community service providers offering child care services under the following mandatory conditions:
 - Child care services shall only be provided to employees of Essential Businesses.

- Child care must be carried out in stable groups of 12 or fewer (“stable” means that the same 12 or fewer children are in the same group each day).
- Children shall not change from one group to another.
- If more than one group of children is cared for at one facility, each group shall be in a separate room. Groups shall not mix with each other.
- Child care providers shall remain solely with one group of children.

ANIMAL CARE SERVICES.

- Animal shelters, veterinary care, and pet food and supply stores.
- Grooming, if necessary, for the health and wellbeing of the animal. Pet daycare, but only for employees of Essential Businesses.
- Pet food and pet supply stores must comply with the Rules for Essential Retail Establishments in Exhibit A.

HOTELS AND MOTELS.

- Hotels and motels, to the extent used for lodging or delivery or carry-out food services.
- Dallas County Order: Short-term rental of all or part of a residential property to a person who is not a permanent resident is prohibited. Within the meaning of this Order, a “permanent resident” is a person who has the right to use or possess a room at the residential property for at least 30 consecutive days, so long as there is no interruption of payment for the period. This Order does not prohibit short-term rental to hospital employees or other licensed healthcare professionals, military personnel, law enforcement personnel, government employees, or Dallas County residents who need a place to self-quarantine away from their family and/or roommates. Renters currently occupying short-term rental properties (April 8) shall be permitted to complete the current rental contract but are required to follow the requirements of this order. **Inquiries related to enforcement of this Order will be referred to Dallas County.**
- Social gatherings in hotels, motels, and short-term rentals are prohibited.

PROVIDERS OF BASIC NECESSITIES TO ECONOMICALLY DISADVANTAGED POPULATIONS.

- Businesses and organizations that provide food, shelter, social services, and other necessities of life for economically disadvantaged or otherwise needy individuals.
- Food pantries.
- Resale stores that receive clothing and household item donations for shelters.
- Transportation for the economically disadvantaged (i.e. transportation to a domestic violence shelter).

ESSENTIAL SERVICES NECESSARY TO MAINTAIN ESSENTIAL OPERATIONS OF RESIDENCES OR OTHER ESSENTIAL BUSINESSES.

- Mail, shipping, and delivery services, warehouse/distribution and fulfillment, storage moving services, janitorial services, laundry services, computer, audio or video electronics, sanitary equipment, and medical equipment.
- Cleaning services necessary to maintain essential operations of residences or other Essential Businesses.
- Print shops that provide services to Essential Businesses.

- The leasing of residential properties, including apartment leasing offices.
- Pool service companies are essential to the operation of residences.
- Management companies for public improvement districts are essential for the operation of residences and other Essential Businesses.
- The towing of illegally parked vehicles from residences and Essential Businesses is necessary to obtain essential operations.
- Computer and cell phone repair businesses supply other Essential Businesses with the support of supplies needed to operate.
- All employers that are common carriers, motor carriers, private carriers, shippers, delivery services, moving companies and contract carriers that load or unload cargo, supplies, equipment or goods at any point located in Dallas County shall comply with the rules in Exhibit E.

NEWS MEDIA.

- Newspapers, television, radio, and other media services.

RELIGIOUS AND WORSHIP SERVICES.

- Services should be provided through remote telework from home unless they cannot be provided through remote telework. If religious services cannot be conducted from home or through remote services, they should be conducted consistent with the Guidelines from the President and the CDC by practicing good hygiene, environmental cleanliness, and sanitation, and by implementing social distancing to prevent the spread of COVID-19.

FUNERAL SERVICES. Funeral, mortuary, cremation, burial, cemetery, and related services may continue as long as social distancing guidelines are followed.

III. NON-ESSENTIAL BUSINESSES.

- Employees of non-essential businesses may conduct the following minimum basic operations at their workplaces:
 - The minimum necessary activities to maintain the value of the business's inventory, ensure security, process payroll and employee benefits, or for related functions.
 - The minimum necessary activities to facilitate employees of the business being able to continue to work remotely from their residences.
- The following is a non-exclusive list of non-essential businesses:
 - Estate sales/garage sales.
 - Commercial amusement.
 - Country clubs and golf clubs.
 - Arts and crafts stores
 - Fabric stores
 - Weight loss centers, except to the extent that food is being sold for curbside pick-up or delivery. In-person consultations are prohibited.
 - Gyms, personal training, gymnastics studios, and similar facilities.
 - Dallas County Order: Door-to-door solicitation creates an unnecessary face-to-face situation for residents who are home in greater numbers due to the closure of schools and businesses, potentially endangering the health of residents. Under this

Order, door-to-door solicitation is prohibited, including the leaving of written materials on the door or mailbox of a residence. This provision does not apply to any business in the grocery supply chain or any non-profit providing community resources for those effected by the coronavirus. Nothing in this Order prohibits utility companies or government agencies from contacting individuals at their residences to perform their normal business functions. **Inquiries related to enforcement of this Order will be referred to Dallas County.**

- Vape shops, smoke shops, and CBD oil shops.
- Beauty supply stores.
- Hair salons.
- Nail salons.
- Spas.
- Tattoo and piercing studios.

IV. EXHIBITS LIST.

- Exhibit A: Rules for Essential Retailers
- Exhibit B: Rules for the Construction Industry
- Exhibit C: Rules for Manufacturers and Distributors
- Exhibit D: Rules for Financial Institutions
- Exhibit E: Rules for Common Carriers, Shippers, Delivery Services, and Related Companies
- Exhibit F: Rules for Real Estate Agents

V. OTHER IMPORTANT FACTS.

All employees, including employees of Essential Businesses, are instructed to remain home if sick.

In addition, if someone in a household has tested positive for coronavirus, the household is ordered to isolate at home. Members of the household cannot go to work, school, or any other community function, except for workers included in Essential Healthcare Operations who may continue to work in accordance with CDC guidance.

To the greatest extent possible, all Essential Activities and work at Essential Businesses must be performed in compliance with the DCHHS Social Distancing Recommendations, including maintaining six feet social distancing for both employees and the general public.

The Order does not require that Essential Businesses keep their employees below a specified maximum number.

Non-essential businesses may continue operations consisting exclusively of employees or contractors performing activities at their own residences (i.e. working from home). Individuals may return to a non-essential business to pick up mail.

Hotels are a “place of residence” under the Order and are considered an Essential Business. The Order applies only to individuals currently living within Dallas County; any individual “living” in a hotel must shelter in place at the hotel and abide with the order for the duration of the order. As to those individuals not currently living in Dallas County i.e., out of town visitors, these individuals are not subject to the order.

Because the order specifically applies to all individuals currently living within Dallas County, an individual must shelter in place unless an exemption applies. This includes all individuals who live within Dallas County but work in another county.

Any manufacturer who retools so that a substantial part of its business is for the purpose of manufacturing and producing ventilators, masks, personal protective equipment, or any supply necessary for Essential Healthcare Operations may apply for an “essential business” exemption under this Order. Submit requests for an exemption to BusinessCOVID19@dallascounty.org.

All delivery hour restrictions for transport to or from any entity involved in the selling or distribution of food products, medicine, or medical supplies are suspended in Dallas County for the next 60 days.

All sales of bath or toilet tissue occurring are limited to the greater of: (a) 12 rolls per purchase; or (b) one package per purchase. This provision does not apply to the sale of bath or tissue paper to a government organization or Essential Business.

Nursing homes, retirement, and long-term care facilities are prohibited from allowing non-essential visitors to access their facilities unless to provide critical assistance or for end-of-life visitation.

The order does not require individuals to carry documentation as proof that they are employed by an Essential Business.

The order does not require Essential Businesses to take the temperature of employees that report to work. EXCEPTION: Contractors and workers at construction sites, essential retail workers, and manufacturer and distributor workers must take their temperature before arriving to work.

Employers may not implement any rules making a negative COVID-19 test or a note from a healthcare provider a requirement before a COVID-19 recovered employee can return to work.

Social gatherings of any number of people are not permitted under the order unless it is to care for a family member or pet in another household.

For purposes of determining a person’s right to possession of and access to a child under a court-ordered possession schedule, the existing trial court order shall control in all instances. Possession of and access to a child shall not be affected by any shelter-in place order or other order restricting movement issued by a governmental entity that arises from the COVID-19 pandemic (pursuant to Supreme Court of Texas order dated March 24, 2020).

For further inquiries or to report possible violations in the City of Dallas please call **3-1-1**.

For other city information related to the COVID-19: <https://dallascityhall.com/Pages/Corona-Virus.aspx>

For more information from the County, please visit: <https://www.dallascounty.org/government/comcrt/jenkins/covid-19.php>

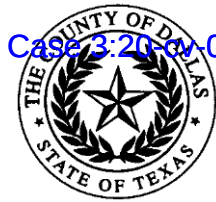
For further reference, see The U.S. Department of Homeland Security in its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0: <https://www.cisa.gov/publication/guidance-essential-critical-infrastructure-workforce>

For more information on religious and worship services, see the Texas Attorney General's Guidance for Houses of Worship During the COVID-19 Crisis that can be found at www.texasattorneygeneral.gov/sites/default/files/images/admin/2020/Press/AG%20Guidance%20for%20Houses%20of%20Worship%20During%20the%20COVID-19%20Crisis.pdf.

The list of essential services, as specified in Governor Abbott's Executive Order, GA-14, may be expanded with the approval of the Texas Division of Emergency Management (TDEM). TDEM maintains an online list of essential services and any approved additions. Requests for additions should be directed to TDEM at EssentialServices@tdem.texas.gov or by visiting www.tdem.texas.gov/essentialservices.

For further inquiries or to report possible violations of the County Shelter in Place Order, please call **2-1-1**.

Physicians may call the DCHHS 24/7 answering service at **1-877-605-2660** for consultation.



DALLAS COUNTY

EXHIBIT A

Rules for Essential Retailers

This document provides guidance for persons and business associated with essential retail on the meaning and application of Order issued by Dallas County Judge Clay Jenkins on March 31, 2020 (the "Order").

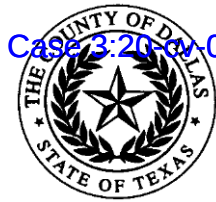
Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus and protective measures to be taken in all establishments.

Definition of Essential Retailers.

1. Stores that Sell Groceries and Other Essential Supplies. Grocery stores, supermarkets, warehouse stores, big-box stores, bodegas, liquor stores, convenience stores, and farmers' markets that sell food products and household consumer products (such as cleaning and personal care products). This includes stores that sell groceries and also sell other non-grocery products.
2. Gas Stations and Businesses Needed for Transportation. Gas stations, auto-supply stores, auto-repair, and bicycle repair. Auto-dealerships, for in-person mechanical services or to complete an online transaction on an appointment basis only.
3. Other Essential Retailers. Pet food and supply stores. Laundromats, dry cleaners, and laundry service providers, hardware stores, and related facilities. Firearm and ammunition suppliers and retailers for purposes of safety and security. Hardware stores and business that sell electrical, plumbing, and other materials necessary to support Essential Businesses, and Essential Government Functions, and Critical Infrastructure.

Safety Rules for All Essential Retailers. All employers involved in essential retail activity must follow the requirements set forth in the rules below:

1. All workers must take their temperature at their residence before going to an Essential Retailer. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to an essential retailer or other place of business, and must remain at their residence;
2. To the greatest extent possible and as equipment becomes available, an Essential Retailer must implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
3. Gatherings during meals or breaks are prohibited;
4. Workers must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
5. Employers must allow non-essential personnel to work from home when possible;
6. Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms and food preparation areas. Ensure that adequate supplies are maintained;



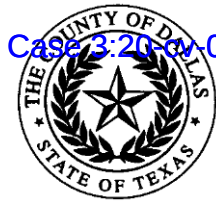
DALLAS COUNTY

7. Workers must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift.
8. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines;
9. There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
10. Employers must designate both a member of management as the COVID-19 Safety Monitor and a senior hourly worker (that is not a member of management) as the COVID-19 Vice Safety Monitor on each store to have the authority to work together to enforce these rules. Employers in unionized workplaces should consult with the employee's representatives on this designation.

General Rules for Essential Retailers.

1. Employers shall implement an organized line system where workers, customers, and other persons are not less than six feet apart at all times;
2. To the greatest extent practicable, designate shopping times for at risk populations (seniors, pregnant people, and people with underlying health conditions);
3. To the greatest extent possible, implement a system to restrict the number of customers who are physically present at an Essential Retailer so that six foot spacing may be maintained;
4. Employers shall implement purchase limits on high-demand items (toilet paper, soap, hand sanitizer);
5. To the greatest extent possible, employers shall offer pick up services or delivery services of grocery items and other essential supplies; and
6. Self-service food stations are prohibited. Self-service stations are defined as items that customers use common serving utensils to serve themselves, including but not limited to, salad bars, hot dog stands, self-service bulk food items, and other related food items. This section does not apply to self-checkout stations, so long as the checkout stations are cleaned at least every 30 minutes.

Enforcement. Failure to strictly comply with this Order can result in penalties described below. Additionally, any essential retailer who fails to comply with these rules can be removed from the essential business list.



DALLAS COUNTY

EXHIBIT B

Rules for the Construction Industry

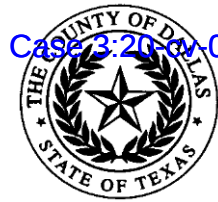
This document provides guidance for persons and business associated with the building and construction industries and trades on the meaning and application of Order issued by Dallas County Judge Clay Jenkins on March 29, 2020 (the "Order").

Reason for Construction Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

Construction as Critical Infrastructure. The Order classified construction for public works, residential, commercial, and schools as critical infrastructure. Elective additions and maintenance are prohibited.

Requirements for Construction. All employers involved in construction activity must follow the requirements set forth in the COVID-19 Safety Recommendations issued by the Construction Industry Safety Coalition, including the rules below:

1. All workers and contractors (hereafter referred to as "workers") must take their temperature at their residence. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible, implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker or contractor has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
3. To the greatest extent possible, shift work must be implemented such that each shift shall have no more than fifty percent (50%) of the workers who were on shift on March 16, 2020. Once assigned to a shift, workers shall not change from one shift to another;
4. To the greatest extent possible, limit crossover of subcontractors;
5. Gatherings during meals or breaks are prohibited;
6. Workers must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
7. Workers must not use a common water cooler. Employers shall provide individual water bottles or instruct workers to bring their own;
8. Employers must allow non-essential personnel to work from home when possible;
9. Employers must provide soap and water and hand sanitizer in the workplace, including all restrooms. Ensure that adequate supplies are maintained;
10. If running water is available at the site, workers must wash their hands for at least twenty (20) seconds before beginning work, when they remove gloves, and before and after the use of shared items such as tools or multi-user devices, before and after any meal or restroom breaks, and when their shift or work time ends.
11. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines;



DALLAS COUNTY

12. Employers must provide one (1) working flushing toilet for every fifteen (15) workers on site or one (1) outdoor portable toilet for every 10 workers on site;
13. There shall be no adverse action taken against an employee who has been quarantined, or advised to self-quarantine, due to possible exposure to coronavirus; and
14. Employers must designate a COVID-19 safety monitor on each site who has the authority to enforce these rules;

Enforcement. Failure to strictly comply with this Order can result in penalties described below. Additionally, the general contractor and non-compliant subcontractor can be removed from the essential business list.



Stay Home Stay Safe

Rules for Manufacturers and Distributors

This document provides guidance for persons and business associated with the building and construction industries and trades on the meaning and application of Order issued by Dallas County Judge Clay Jenkins on April 02, 2020 (the "Order").

Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

Definition of Critical Manufacturers and Distributors. This Order defines Critical Manufacturing and Distribution as the industries listed in the U.S. Department of Homeland Security in its Guidance on the Essential Critical Infrastructure Workforce, Version 2.0.

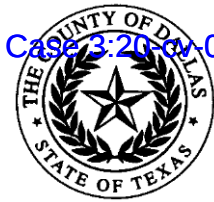
Rules for Manufacturers and Distributors. All employers involved in critical manufacturing and distribution activity must follow the requirements set forth in the rules below:

1. All employees must take their temperature at their residence before going to work at a manufacturing or distribution center. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors check the temperature of all employees before the employee begins work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are not permitted to work and must be sent home immediately;
3. Gatherings during meals or breaks are prohibited;
4. Employees must keep a six (6) foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the employees;
5. To the extent practicable, employers shall adjust shift timing to allow for greater physical distance between employees;
6. Employers must allow non-essential personnel to work from home when possible;
7. Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms. Employers shall ensure that adequate supplies of soap and hand sanitizer are maintained;



8. Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to departing the work site.
9. Employers shall discourage employees from sharing work tools when possible.
10. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so employees may follow hygiene guidelines;
11. There shall be no adverse action taken against an employee who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
12. Employers must designate both a member of management as the COVID-19 Safety Monitor and a senior hourly employee (that is not a member of management), or a non-management employee if an hourly employee is not available, as the COVID-19 Vice Safety Monitor at each site to have the authority to work together to enforce these rules. Employers in unionized workplaces should consult with the employee's representatives on this designation.

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any manufacturer or distributors who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT D

Rules for Financial Institutions

Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

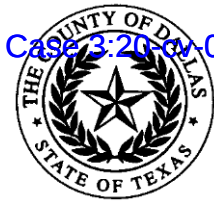
1. Check Cashing Businesses

Application. For the purpose of this Order, “Check Cashing Business” means a person or entity that for compensation engages, in whole or in part, in the business of cashing checks, drafts, money orders, traveler’s checks or other instruments for the transmission or payment of money. This Order does not apply to a retail seller engaged primarily in the business of selling consumer goods, including consumables, to retail buyers that cash checks or issue money orders as a service to its customers that is incidental to its main purpose or business.

Interest and Fees. Fees shall not exceed 2% of the amount of the check, draft, or money order, or \$2, whichever is greater. Interest on a loan or advance of money shall not exceed 15% per annum of the total amount of the advance, provided that total fees associated with the loan do not exceed \$75, regardless of the name or type of charge. A check cashing business may charge only those charges expressly authorized in this Order in connection with a loan or advance issued.

Safety Rules. All check cashing businesses must follow the requirements set forth in the rules below:

- a) All employees must take their temperature at their residence before going to work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
- b) To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
- c) Employees must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
- d) Employers shall restrict the number of customers physically present in the store to only those people necessary to complete the transaction as determined by the customer. All other individuals must remain outside the store while the transaction is completed;
- e) Employers must allow non-essential personnel to work from home when possible;
- f) Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms and food preparation areas. Employers must ensure that adequate supplies are maintained;
- g) Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift;



DALLAS COUNTY

- h) Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines; and
- i) There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy.

2. Pawnshops

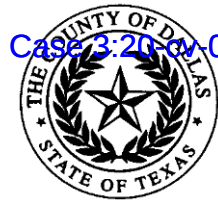
Application. These rules apply to all locations or premises at which a pawnbroker regularly conducts business.

Interest and Fees. Interest on a loan of money extended pursuant to a pawn transaction shall not exceed 15% per annum of the total amount of the advance, provided that total fees associated with the loan do not exceed \$75, regardless of the name or type of charge. A pawnshop may charge only those charges expressly authorized in this Order in connection with a pawnshop loan.

Minimum Term Length. A pawnshop shall hold the goods pledged as collateral for at least 120 days after the end of the Emergency Declaration issued by Judge Jenkins or the end of the Emergency Declaration issued by Governor Abbott, whichever is later.

Safety Rules. All pawnshops must follow the requirements set forth in the rules below:

- a) All employees must take their temperature at their residence before going to work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
- b) To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors must check the temperature of all workers and contractors with a forehead thermometer before the worker begins work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are to be sent home immediately;
- c) Employees must keep a 6 foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the workers;
- d) Employers shall restrict the number of customers so that only one customer is physically present in the store at a time;
- e) Employers must allow non-essential personnel to work from home when possible;
- f) Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms and food preparation areas. Employers must ensure that adequate supplies are maintained;
- g) Employees must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift;
- h) Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines; and
- i) There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) have not reported to

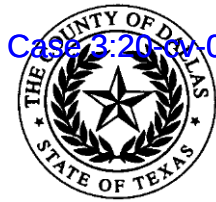


DALLAS COUNTY

work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy.

3) **Enforcement**

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any financial institution who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT E

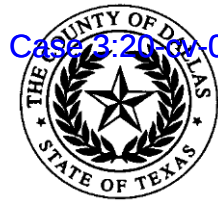
Rules for Common Carriers, Shipper, Delivery Services, and Related Companies

Reason for Rules. The purpose of these rules is to outline the steps that every employer and employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent worker exposure to coronavirus, protective measures to be taken on the jobsite, and cleaning and disinfecting procedures.

Definition of Common Carriers. All employers which are common carriers, motor carriers, private carriers, shippers, delivery services, moving companies and contract carriers which load or unload cargo, supplies, equipment or goods at any point located in Dallas County.

Rules for Common Carriers. All employers involved in trucking, shipping, delivery and moving services, and related industries must follow the requirements set forth in the rules below:

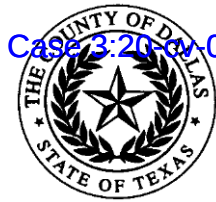
1. All employees must take their temperature at their residence before going to work. If a worker has a temperature above 99.6 degrees Fahrenheit, then they are prohibited from going to work and must remain at their residence;
2. To the greatest extent possible and as equipment becomes available, employers must implement a system whereby supervisors check the temperature of all employees before the employee begins work. If an employee has a temperature above 99.6 degrees Fahrenheit, then they are not permitted to work and must be sent home immediately;
3. Gatherings during meals or breaks are prohibited;
4. Employees must keep a six (6) foot distance between people at all times, unless the work being performed requires multiple individuals for the safety of the employees;
5. To the extent practicable, employers shall adjust shift timing to allow for greater physical distance between employees, including coordination between dispatch and scheduling so that there is no overlap between crews traveling to different locations;
6. Employers must allow non-essential personnel to work from home when possible;
7. Employers must provide soap and water, or hand sanitizer if no soap or water is available, in the workplace, including all restrooms. Employers shall ensure that adequate supplies of soap and hand sanitizer are maintained. Hand sanitizer must be available in each vehicle;
8. Workers must wash their hands for at least twenty (20) seconds before beginning work, before any food preparation, before and after the use of shared items, after any meal or restroom breaks, and immediately prior to the end of the work shift;
9. Employers must ensure that employees use gloves when handling shared tools or equipment (such as dollies, dock plates, and controls) and that employees wash their hands for at least 20 seconds after handling such tools or equipment;
10. To the greatest extent possible, drivers and other personnel should stay in their vehicles while the vehicles are being loaded and unloaded, unless required for employee safety;



DALLAS COUNTY

11. To the greatest extent possible, receipts, bills of lading, acknowledgements and other such documentation should be electronic so as minimize the need for personnel to physically sign and exchange documents;
12. Rest breaks of at least fifteen (15) minutes for every four (4) hours worked must be provided so workers may follow hygiene guidelines;
13. There shall be no adverse action taken against a worker who has, due to possible exposure to coronavirus, (1) been quarantined or advised to self-quarantine; (2) has not reported to work because the worker has a temperature of 99.6 degrees or higher; and (3) requested to use paid sick leave under the employer's policy; and
14. Employers must designate both a member of management and an employee who is not a member of management COVID-19 safety monitors at each of the business's warehouses, yards or other locations who have the authority to work together to enforce these rules. Employers in unionized workplaces should consult with the employee's representatives on this designation.

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any common carrier or related business who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

EXHIBIT F

Rules for Real Estate Agents

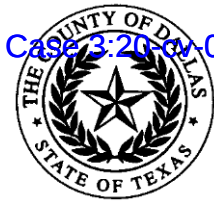
Reason for Rules. The purpose of these rules is to outline the steps that every Agent/Employee must take to reduce the risk of exposure to COVID-19. The rules describe how to prevent exposure to coronavirus and protective measures to be taken in all real estate showing.

Definition of Real Estate Activity. For the purposes of this Order, real estate activity includes any activity governed by the Texas Real Estate License Act, the Inspector Act, the Residential Service Company Act, and the Timeshare Act.

Safety Rules for All Real Estate Agents/Employees. All realtors and their employees involved in essential real estate activity must follow the requirements set forth in the rules below:

1. Open Houses are prohibited;
2. All realtors and their employees (hereafter referred to as "realtors") must take their temperature at their residence prior to any real estate showing. If an agent has a temperature above 99.6 degrees Fahrenheit, they are prohibited from participating in any real estate showings and must remain at their residence;
3. Realtors and clients must travel to showings in separate vehicles;
4. Realtors, clients, and homeowners must follow the six-foot social distancing rule at all times;
5. Realtors and staff should limit in person contact and conduct business remotely as much as possible;
6. Realtors must wear a protective mask and provide new, unused protective masks to clients when touring a site;
7. Employers must designate a COVID-19 safety monitor at each real estate office who has the authority to enforce these rules;

Enforcement. A violation of this Order is a misdemeanor punishable by a fine not to exceed \$1,000 and/or confinement in jail for a term not to exceed 180 days. Additionally, any realtor who fails to strictly comply with these rules can be removed from the essential business list and prohibited from operating in Dallas County.



DALLAS COUNTY

DCHHS Social Distancing Rules

1) Vulnerable Populations: Limit Outings

- Vulnerable populations include people who are:
 - 60 years old and older.
 - People with certain health conditions such as heart disease, lung disease, diabetes, kidney disease and weakened immune systems.
- For vulnerable populations, don't go to gatherings unless it is essential. Stay home. Avoid people who are sick.

2) Workplace and Businesses: Minimize Exposure

- Suspend nonessential employee travel.
- Ensure employees practice social distancing and do not work within six feet of one another.
- Urge essential employees to stay home when they are sick and maximize flexibility in sick leave benefits.
- Do not require a doctor's note for employees who are sick.
- Maximize telecommuting options.
- Persons who need to be at work to provide essential services of great benefit to the community must take steps in their workplace to minimize risk.

3) Cancel Non-essential Events

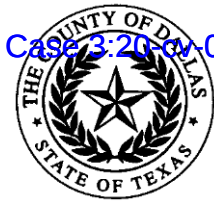
- Cancel non-essential events.
- Do not attend any events or gatherings if sick.
- For events that aren't cancelled, we recommend:
 - Having hand washing capabilities, hand sanitizers and tissues available.
 - Frequently cleaning high touch surface areas like counter tops and hand rails.
 - Finding ways to implement social distancing..

4) Schools: Safety First

- Do not have your child attend school if sick.
- If you have a child with chronic health conditions, consult the child's doctor about school attendance.
- Schools should equip all classrooms with hand sanitizers and tissues.
- Recommend rescheduling or cancelling events that are not essential.
- Explore remote teaching and online options to continue learning.
- Schools should develop a plan for citywide school closures, and families should prepare for further closures.

5) Transit: Cleaning and Protection

- Increase cleaning of vehicles and high touch surface areas.
- Provide hand washing/hand sanitizers and tissues in stations and on vehicles.
- Ensure social distancing practices are implemented to the full extent possible.



DALLAS COUNTY

6) Health Care Settings: Avoid as possible, protect the vulnerable

- Long-term care facilities should have a COVID-19 plan in accordance with CDC or state guidelines.
- Long-term care facilities should restrict all visitation except for certain compassionate care situations, such as end of life situations.
- The general public should avoid going to medical settings such as hospitals, nursing homes and long-term care facilities, even if you are not ill.
- If you are ill, call your health care provider ahead of time, and you may be able to be served by phone.
- Do not visit emergency rooms unless it is essential.
- Follow guidance and directions of all facilities.

7) Everyone: Do your part

The best way for all Dallas County residents to reduce their risk of getting sick, as with seasonal colds or the flu, still applies to prevent COVID-19:

- Wash hands with soap and water for at least 20 seconds.
- Cough or sneeze into your elbow or a tissue. Throw the tissue in the trash.
- Stay home if you are sick.
- Avoid touching your face.
- Try alternatives to shaking hands, like an elbow bump or wave.
- If you have recently returned from a country, state or region with ongoing COVID-19 infections, monitor your health and follow the instructions of public health officials and CDC guidance.
- There is no recommendation to wear masks at this time to prevent yourself from getting sick.

You can also prepare for the disruption caused by an outbreak. Preparedness actions include:

- Prepare to work from home if that is possible for your job, and your employer.
- Make sure you have a supply of all essential medications for your family.
- Prepare a child care plan if you or a caregiver are sick.
- Make arrangements about how your family will manage school closures.
- Plan for how you can care for a sick family member without getting sick yourself.
- Take care of each other and check in by phone with friends, family and neighbors that are vulnerable to serious illness or death if they get COVID-19.
- Keep common spaces clean to help maintain a healthy environment for you and others. Frequently touched surfaces should be cleaned regularly with disinfecting sprays, wipes or common household cleaning products.

Exhibit FF

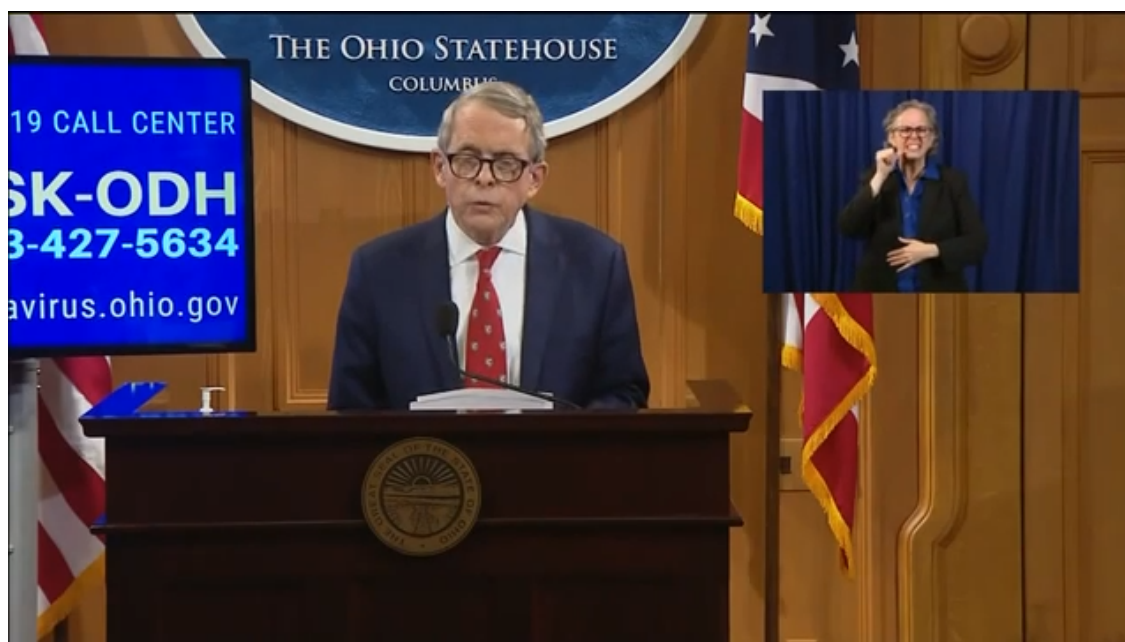
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BREAKING NEWS / Here is the latest news on the coronavirus outbreak April 17**WEATHER ALERTS** / Winter Weather Advisory: **Erie, Huron, Ottawa, Sandusky****CORONAVIRUS**

Ohio National Guard members begin working at prison that reported inmate coronavirus death

by: Talia Naquin

Posted: Apr 14, 2020 / 12:15 PM EDT / Updated: Apr 14, 2020 / 12:15 PM EDT



ORIENT, Ohio (WJW) - Ohio National Guard medical personnel reported to Pickaway Correctional Institution Monday.

35°

More than a dozen members of the medical staff are out sick, according to Gov. Mike DeWine.

DeWine reported that an inmate housed there died over the weekend. He says his test results confirmed he tested positive for COVID-19.

Medics from the Ohio National Guard are scheduled to be at the facility for up to 60 days.

The Ohio National Guard is also temporarily supporting the medical staff at the Federal Correctional Institution Elkton in Columbiana County.

There are approximately 600 Ohio National Guard and Ohio Military Reserve members who are working across the state at food banks, looking for alternative care sites and collecting personal protective equipment.

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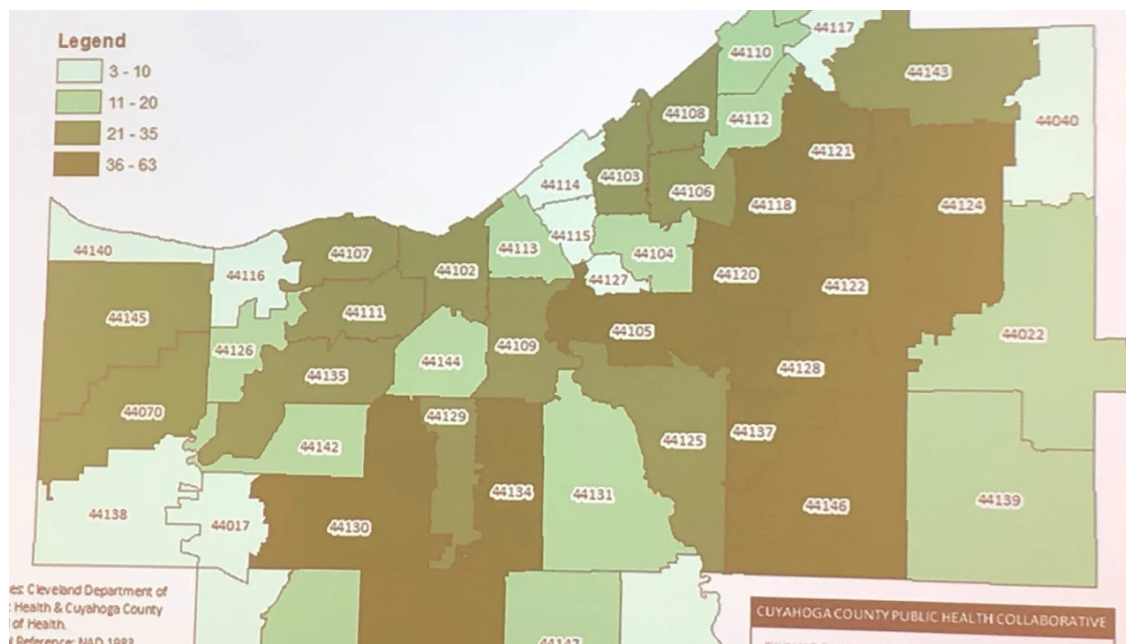
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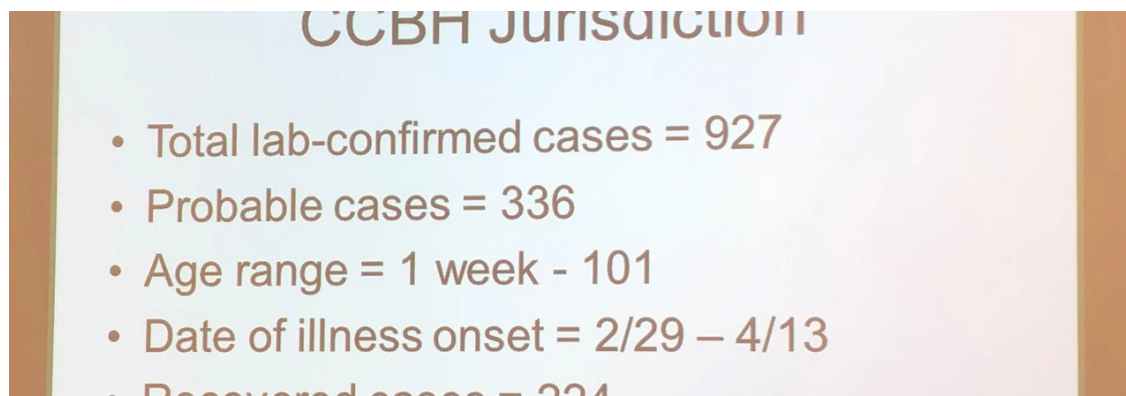
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Maps show areas with the most and fewest coronavirus cases in Cuyahoga County

by Talia Naquin / Apr 17, 2020

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'Ongoing spread of virus' in Cuyahoga County with new infections this week

by Talia Naquin / Apr 17, 2020

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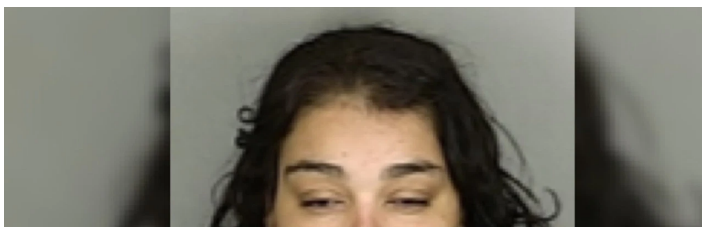


25 Cleveland Clinic caregivers leave for New York hospital to assist with COVID-19 efforts

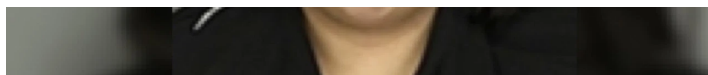
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Pennsylvania 15-year-old accused of stabbing grandfather's home nurse with sword



25 Cleveland Clinic caregivers leave for New York hospital to assist with COVID-19 efforts

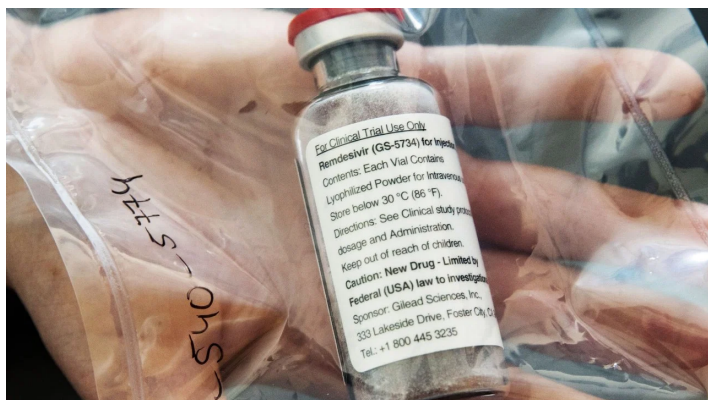


Pledge of Allegiance brings Ohio neighborhood together each morning – at a distance!



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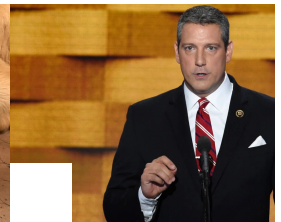
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4/17/2020

Ohio National Guard members begin working at prison that reported inmate coronavirus death

Case 3:20-cv-00832-E Document 47-3 Filed 04/18/20 Page 219 of 219 PageID 1069

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